

10-30 Cents

MAY 1911

AMERICAN CARPENTER AND BUILDER



U. S. DEPARTMENT OF COMMERCE
MAY 1911

THE WORLD'S GREATEST BUILDING PAPER

MAY 5 1911

MAY NUMBER—Partial Contents

Summer Cottages—How They Should Be Built

Pergolas—"Out Door" Living Rooms

Difficulties in Stair Building

How to Build Your Own Boat

Store Fixtures Detailed

House and Barn Plans

Garage Building

150

Pages

Practical

Building Helps

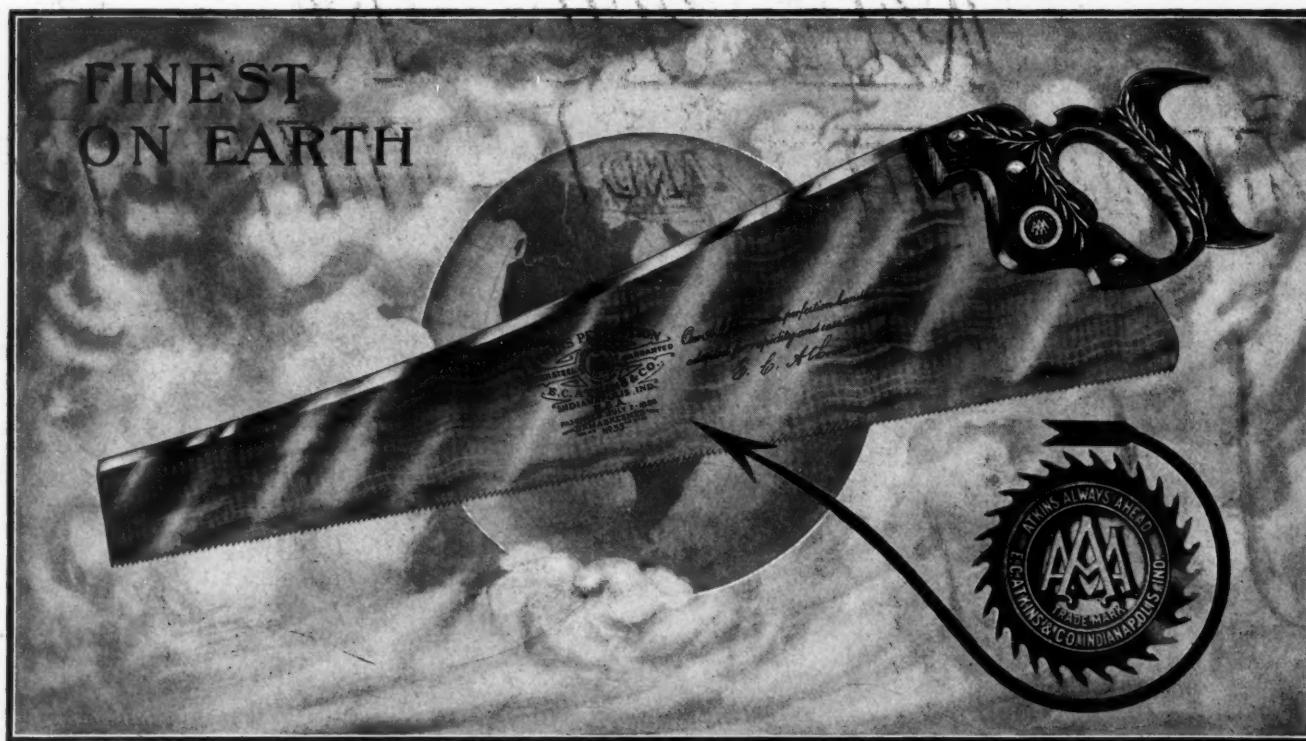
150

Pages

Money -

Making Ideas

It's a Pleasure To Use Fine Saws



Saws that hang just right---that run easiest---that cut fastest---that saw to the mark---that take a sharp cutting edge and hold it

We have made a lifelong study of saws. Long before many of you were born, E. C. ATKINS & COMPANY were already making Saws. We know better than anybody else what the high class mechanic wants in a saw, and we know how to make saws that give satisfaction.

Is This the Kind?

Do you want a saw that sharpens easily, that holds its tension, that will receive a very sharp cutting point and hold it? Do you want a saw that cuts fast and easy and true and that hangs just right, so that it will run with the least exertion?

Then you should by all means use an ATKINS SILVER STEEL SAW, because they will do these things for you.

Guarantee

These are rather broad statements to make, but we back them up by the broadest possible guarantee. ATKINS SILVER STEEL SAWS are not only guaranteed to be perfect in material and construction, but we guarantee them to give perfect satisfaction. Listen to this. If your ATKINS SILVER STEEL SAW, for **any reason** does not cut faster, run easier and hold its edge longer than any saw you ever used—take it back to your Dealer and get **your money back** or a new saw. No argument—no proof is necessary; don't hesitate—just take it back and get your money—that's all. If your Dealer even hesitates, show him this advertisement and, if necessary, let

Go to your Dealer and ask him to show you a genuine ATKINS SILVER STEEL SAW and note these things for yourself. If your Dealer does not carry them in stock, he will order for you from his wholesale house. Insist on an ATKINS SILVER STEEL and see that our name is on the blade.

OUR FREE OFFER. If you will send us ten cents in currency or stamps, we will forward you free of charge, a high grade carpenter's nail apron, also our Saw Sense book, illustrating and describing our most popular saws, together with a carpenter's time book and wage scale, also a great deal of useful information in regard to High Grade Saws. Address

us know. We'll see that you get satisfaction. Can we make it stronger? Can we give you better protection?

The reason we can do these things is because we know all about our saws. We make them ourselves.

Silver Steel

SILVER STEEL is the finest material that has ever been used in Saw Blades. It is made of virgin ore and contains the very highest ingredients and is manufactured under an exclusive formula. It is as fine as the steel that is used in most high grade razors, and when we tell you that it will receive a sharper cutting edge and hold it longer than any other steel, we know what we are talking about.

Taper Grinding

ATKINS SAWS are the only saws which are ground on an actual taper from the tooth edge **throughout** the entire blade toward the point on the back. They are different from the thin back saw which is simply ground off along the back while ATKINS SILVER STEEL SAWS are ground on the actual taper throughout the entire blade.

The Handle

Many of our SILVER STEEL SAWS are made with the old style straight across handle, but most high-class mechanics prefer the Perfection Handle, because it is scientifically constructed and saves the wrist and saw arm.

E. C. ATKINS & COMPANY, Inc.

INDIANAPOLIS, INDIANA

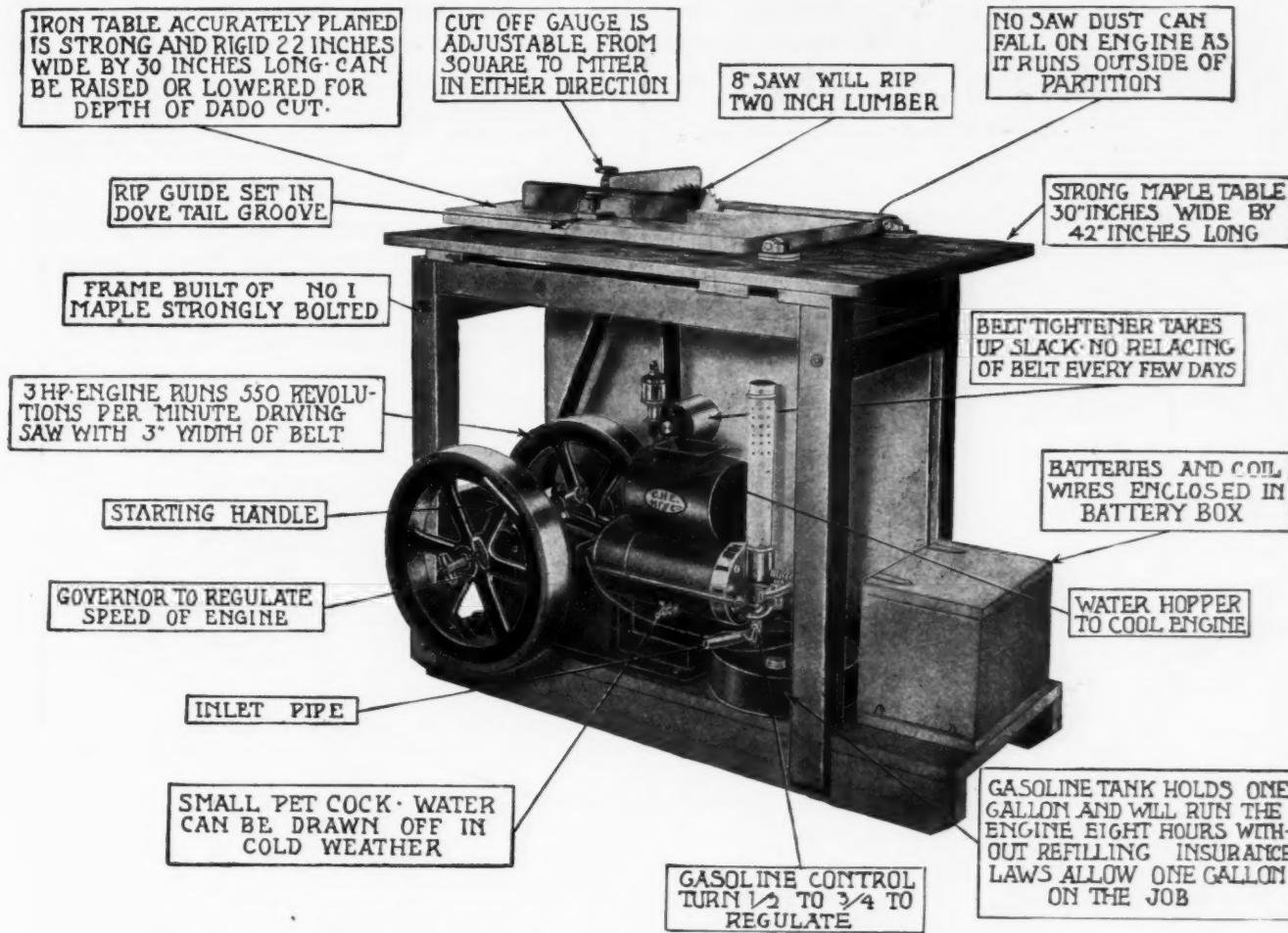
READ THIS LETTER

WILLIAM D. REICHENBACH
CONTRACTOR & BUILDER

Rockford, Ill., Mch. 20, 1911.

This is to certify that I bought a Portable Saw Rig of you and will say it has saved me many times its cost in the one year I have had it. It has never cost me one cent for repairs. At one time it took the place of three good husky men. Our hand rip saws are scarcely ever used. The dado attachment is especially handy in window frames. I do not see how any contractor can get along without one. I would not sell mine at any price if I could not get another like it.

Yours respectfully,
Wm. D. Reichenbach.



===== WRITE FOR OUR ATTRACTIVE FOLDERS =====

Portable Saws and Builders Hoists

GEORGE D. SMITH
814 FISHER BLDG., CHICAGO, ILL.

The American Floor Surfacing Machine

IS NO EXPERIMENT. Its work since 1903 has established a standard for finely surfaced and polished floors. It is the only machine whose work is specified by leading architects and used in the best government buildings and will surface and polish any kind of a floor from common pine to the finest parquetry.

IT IS THE ORIGINAL and only two-roll, self propelled, dust collecting machine, that surfaces close to the wall and can be used in small rooms. Anyone can operate it.

ITS WORK IS RAPID, regular smooth and even because the power that drives the rolls, also propels the machine at the same ratio of speed. It has surfaced and polished millions of square feet of the finest floors in America and Europe.

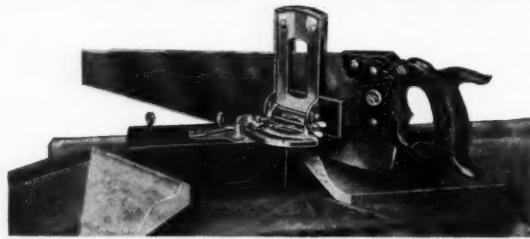
GET A MACHINE that does first class work and in paying quantities, that is fully guaranteed and sold on its merits.

Write for Our Free Book, "Surfacing Floors as a Business."

Manufactured By **The American Floor Surfacing Machine Co., TOLEDO, O.**



THE CROWN SAW GAUGE



Fits on any saw. Used on the scaffold for weatherboarding and cornice work; also inside finishing, stair building and making picture frames, etc. Compact; weighs two pounds. Can be folded up and carried in the hip pocket; takes small space in tool box. Sent prepaid on receipt of \$2.50.

GEM MFG. CO., ELIZABETHVILLE, PA.
L. R. BENDER, Manager

Do Your Next Job of Floor Scraping at Our Expense with a

Little Giant Floor Scraper

Sold only on its merits. A request brings it to your door, freight prepaid. Try it out, if you are convinced it is the best floor scraper on the market, pay for it. If not, return it at our expense.

The Little Giant has scraped millions of square feet of floors. Cuts right up to the baseboard and into every corner. Easy to operate. Will scrape floors quicker, cleaner, and cheaper than any other machine on the market.

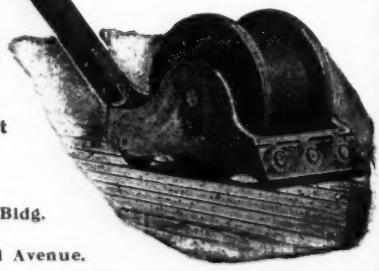
Ask us for our special price on this machine.

Hurley Machine Company

31 S. Clinton St
CHICAGO

NEW YORK: 1011 Flatiron Bldg.

DETROIT: 246 Woodward Avenue.



TWO MINUTE Lever Lock Mortiser

It Chisels the Opening for Locks Greatest Time and Labor Saver

One builder wrote us last month: "You may expect an order for 3 machines as the carpenters are going crazy about my machine. The more I use it, the better I like it."

Think This Over Builder

Our patent double edge, side cutting chisel can cut more wood, four times more rapidly and 100% less exertion than any boring bit. Mortise to be of the same size.

*Sent on trial to any reliable contractor
Our Butt Mortiser and Rule Gauge sent for 75 cents*

A. W. Miller Mfg. Co.



Main Office:
CINCINNATI, O.

Western Office:
RIVERSIDE, CAL.

A WONDERFUL NEW ELLIPSOGRAPH AND DIVIDER*

Called the Kelley

Draftsmen, Pattern-makers, Mechanics, etc., can now obtain an instrument which will draw an ellipse of any given major or minor axis, just as readily as an ordinary compass will draw a circle. For carpenters, builders and contractors its use is a necessity for saving time and doing perfect work.

Price, Complete \$3.00

We positively guarantee satisfaction. Send \$3.00 for this unique instrument and we will send one by return mail and pay charges. It will pay for itself in a saving of time, labor and worry.

J. T. KELLEY
WEST RUSH NEW YORK

TRY THEM ALL- KEEP THE BEST TWILL BE A WEBER IF GIVEN A FAIR TEST

Weber Tools and Appliances stand for themselves—

Try the WEBER Double Acting Floor Scraper

on the same floor with all others on the market. If it is not handier, more time and labor saving and more durable—if its work is not better all thru—return it at our expense.

CABINET SCRAPER



and **Sander** is a tool which every cabinet maker, carpenter and painter should have. It is recognized as the most valuable article of its kind ever invented. Ask your dealer. If he does not handle it, I will ship direct or thru him.

Double Folding Scaffold Bracket

is adjustable to any building. Can't swing. Where it ordinarily requires three rows of scaffolding, with the **Weber** it requires only two; 12 of these brackets when folded take up space only 3 feet x 4 feet x 6 feet



Folding Saw-Filing Vise

Also ask your dealer to show you the **Weber** Folding Saw-Filing Vise—the Saw Vise you want. Has a rigid grip and is almost noiseless. You will find it the most convenient tool you ever had on a job, or in your shop. It takes up no more room in your hand box than an ordinary hammer.



Vise
Open
For
Use



Wax Polishing Brush

and **Sander**. Brush sits square and even and imparts a high gloss. Sand-papering block admits turning paper one-half around, greatly lengthening its life.

Write For Free Trial

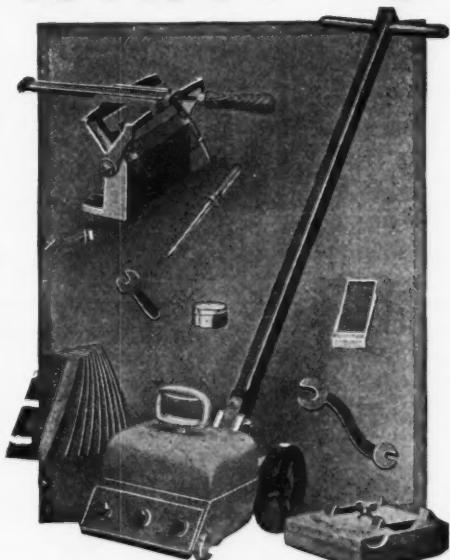
I want you to try the Weber Double Acting Floor Scraper on my 5 to 10 days free trial offer.

JOHN F. WEBER, President

WEBER MANUFACTURING CO.

670 71st Ave., West Allis, Wis.

WHAT IS THE ANSWER?



When nearly every mail brings letters such as are reproduced below—what does it signify? Isn't it almost positive proof that the **Acme Floor Scraping Outfit** does the work? Read these letters—they are simple expressions from contractors who have accepted my free trial offer. They aren't old and shopworn letters either. Look at their dates.

Carrollton, Ill., Mar. 18, 1911

Jos. Miotke.
Dear Sir.—Enclosed find draft in payment for the floor scraping outfit you sent me on trial. I tried the machines and found that they do the work perfectly. I am well pleased with them and if I see anyone looking for a floor scraping outfit I will certainly recommend yours.

Yours respectfully, James C. Sackett.

Williamsport, Ind., March 21, 1911.

Joseph Miotke, Milwaukee, Wis.
Dear Sir—I set the floor scraper to work last Saturday and must say that it is satisfactory in every particular. Enclosed you will please find my check for same.

Respectfully, B. F. Bush.

Eveleth, Minn., March 29, 1911.

Joseph Miotke, Milwaukee, Wis.
Dear Sir.—Enclosed find check in payment for the floor scraping outfit sent me on trial March 2nd. I gave it a hard trial on both old and new floors and concluded that it was just the outfit that I need for my work.

Respectfully, Chas. H. Rutty.

Don't you think it advisable for you to give my outfit a trial? It don't cost you anything to try and if the machines are not satisfactory, just send them back after you have used them for one week and I will pay the charges.

Let me send you full details of this offer. It means money to you, so write to-day.

JOSEPH MIOTKE, 247 Lake Street, MILWAUKEE, WIS.

Get Acquainted

with the

Grimm Woodworker

A Complete

Planing Mill

OUTSIDE OR INSIDE
A Wonder Worker

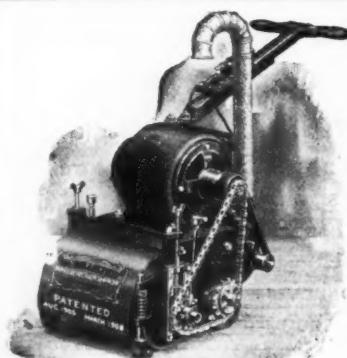


GROOVING AND PANELLING.

9 Machines In One

Rip Saw — Cross Cut Saw — Dado Head — Jointer
Sander — Moulding Knives — Emery Wheels
Jig Saw — Boring Attachment.

GRIMM MANUFACTURING CO., 46 Erie St., Buffalo, N. Y.



Made in three sizes:
18 x 16 and 8 x 12 in. Roller

Perfect Results Are Easily Obtained By Using Schlueter Rapid Floor Surfer

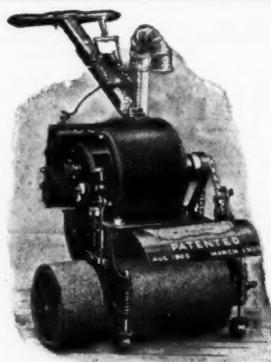
This machine is built on the only correct principle. It is guaranteed to be **The Best** machine with which to produce an even, smooth surface on any kind of large or small wood floor, old or new, hard or soft, and in all buildings: Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks, Reception and Dance Halls, Etc.

The **Schlueter** will remove all joints or warped edges, and oil, wax, lime stains, or the "muck" from skates wheels, in a most satisfactory manner.

[Earning capacity, \$20.00 to \$35.00 per day.]

Send for prices and **Free Trial Proposition.**

M. L. SCHLUETER, Chicago, Ill.
108 N. Canal Street N. Y. Office, 1001 Flat Iron Bldg



Edge Roller easily adjusted to either side.

The Only Self-Setting Plane

Over 25 years ago we commenced to make the Self-Setting Planes. They are shovved in every state and Canada. Thousands of carpenters use them doing work easier, better, quicker, saving time, trouble and temper.

Every issue of this paper has had our ad. in it. If not sold in your town, we will send you a Beech wood plane on trial on receipt of one dollar less than list price, and if you return it at our expense within 30 days of receipt we will refund your money. If you want more than one we will allow you dealers' discount.

In writing, if you mention this paper and send us the addresses of 10 plane users—no matter where they live—we will send you a carpenters' hard tough pencil. If you send us a 2-cent stamp we will send you two pencils.

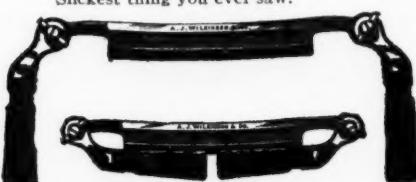
Remember this trial will cost you nothing if you return the plane at our expense, as per circular. We will not knowingly send to consumers where our planes are being sold. This offer is good while this ad. appears.

This paper guarantees that the Gage Tool Co. will do as their advertisement states.

GAGE TOOL CO., Vineland, N. J.

THE FOLDING DRAW KNIFE

Have you seen the folding Draw Knife?
It's the Draw Knife that will draw;
It will quickly draw attention;
Slickest thing you ever saw.



If your hardware dealer does not keep it, we will send it to your address postage paid.

**A. J. WILKINSON & CO., 180 to 188 Washington St.,
BOSTON, MASS.**

AS SURE AS 2 AND 2 IS 4

A SHEARING CUT GETS BEST RESULTS IN FLOOR SCRAPING

Why does a mechanic when scraping a floor by hand use a Shearing Cut? Because he obtains smoothest and quickest work so. When you whittle a piece of wood you use a Shearing Cut.

A Shearing Cut is ALWAYS made with the “DAISY” FLOOR SCRAPER

With One Ten-Inch Blade Single Shearing Cut is Made
With Two Five-Inch Blades Double Shearing Cut is Made

The “Daisy”

CUTS EITHER WITH OR ACROSS THE GRAIN
CUTS RIGHT UP TO BASE BOARD AND INTO EVERY CORNER
IS EASIER ON THE OPERATOR AS IT REQUIRES ONLY A SLIGHT LIFT TO GET BEST WORK
WILL DO MORE WORK IN LESS TIME THAN ANY OTHER IN SAME LENGTH OF TIME
WILL DO PERFECT STRAIGHT EDGED WORK AND WILL PLEASE YOU
CLAMPS ARE INSTANTLY FASTENED
FILING DEVICE FILES BLADES TO RIGHT BEVEL
EDGE-TURNING DEVICE IS A WONDER

UNSOLICITED TESTIMONIALS

Gillette, N. J., Oct. 11th, 1910.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
The flooring has arrived and we have
scrapped with your machine and I find
it does all you claim for it. Inclosed you
will find check as per agreement.

Thanking you for your kindness in al-
lowing me to try this machine and for ex-
tending the time for trial, I am,

Yours respectfully,
FRED L. WALTERS.

Dubuque, Iowa, Sept. 1, '10.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
Immediately after using the Scraper we
have found it to be satisfactory and su-
perior to any we have seen in use.
We herewith inclose draft
in full for same.

Yours truly,
KUTSCH BROTHERS,
per J. P. K.

Belle Fourche, S. Dak., Aug. 4, '10.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
After giving the three Floor
Scrapers a trial we have de-
cided that the “Daisy” is the one we want,
inclosed find draft in full for same.

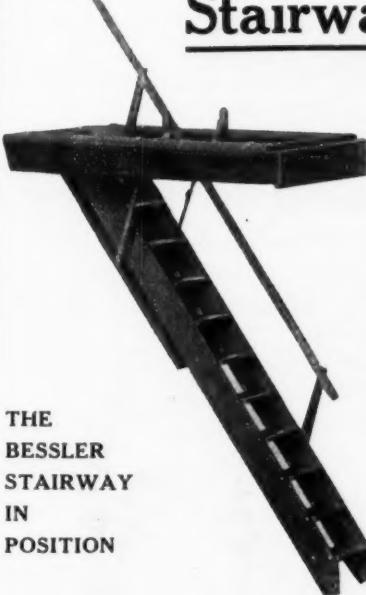
NELSON & GOLDING.

THE DAISY MFG. CO., South Bend, Ind.



We will ship a “DAISY” Outfit
to any responsible contractor who
intends purchasing a floor scraper
for a ten days free trial. Test it
with others, if you do not find it
best return it. The trial will not
cost you a penny.

The Bessler Movable Stairway!



THE
BESSLER
STAIRWAY
IN
POSITION

A device com-
bining useful-
ness, strength
and conven-
ience.

Saves Space!
Low Cost!
Strong and
Durable!
Easy to Operate!
Operates
Automatically!
Adds Value
to House!
Reduces Fire
Risks!
Secures Good
Ventilation!

Write for descriptive circular and price list to

THE
Bessler Movable Stairway Co.
RAVENNA, OHIO

C. E. JENNINGS

TRADE
ARROW → HEAD
MARK

AUGER BITS No. 1½



BEAT the WORLD. TRY THEM and SEE
for YOURSELF. FULLY WARRANTED.

These Bits are universal in scope. They will bore equally well
in hard or soft wood, with the grain or against the grain. They
combine our single skip Auger twist with our extension lip. No
pressure is required to make them bore. They draw themselves
in—they are the easiest boring bits made.

Insist on Having Genuine

C. E. JENNINGS

ARROW → HEAD

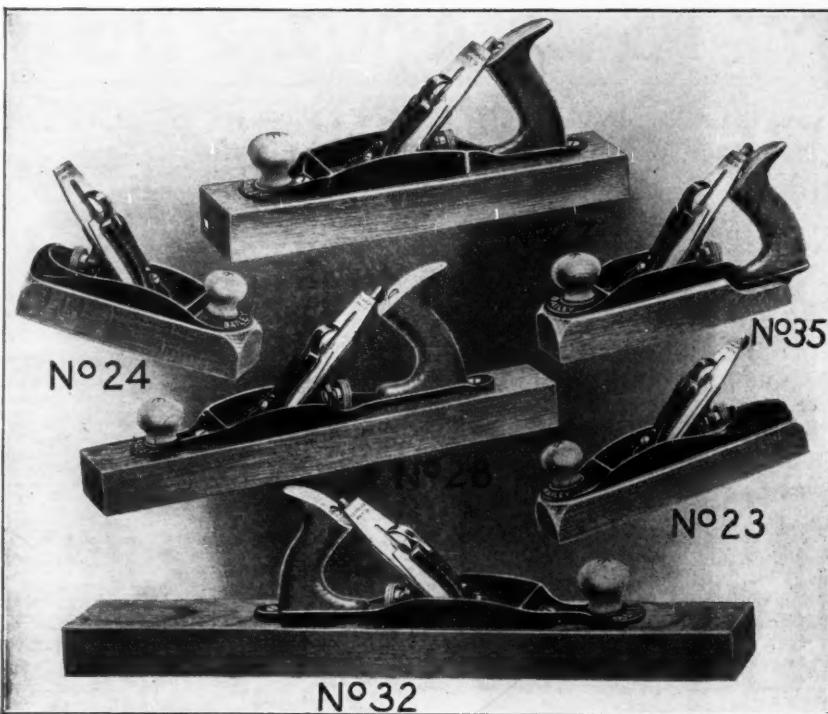
TRADE → MARK.

TOOLS

Accept no substitute—Order by name and number

If you cannot purchase of your dealer we
will furnish direct in sets of 13 in leather
roll or hardwood case at \$6.00 per set.

C. E. JENNINGS & CO.
42 MURRAY ST. NEW YORK



COPYRIGHTED, 1909, BY THE STANLEY RULE & LEVEL CO.

Stanley Tools
AMONG THEM
“BAILEY”
WOOD PLANES

THEY HAVE

The same adjustment as the celebrated “BAILEY” IRON PLANE—differing only in detail where the extra thickness of the Wood Bottom has to be taken into consideration.

The Bottom is made from selected and well-seasoned Beech.

The name “BAILEY” and the number are cast on every Plane, and the name “STANLEY” is stamped on each cutter.

INSIST that your orders be filled with Planes made by the STANLEY RULE & LEVEL COMPANY, which carry with them a GUARANTEE backed by a Company that has been manufacturing Carpenters' and Mechanics' Tools for over half a century.

Send for Catalogue



Stanley Rule & Level Co.
NEW BRITAIN, CONN. U.S.A.



FRONT VIEW OF NEW JOINTER

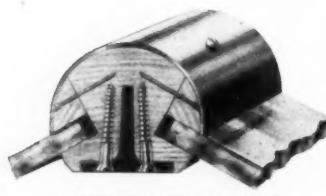
**A New Modern Up-to-Date
Jointer of Unique Design**

Made in 12-16-20 and 24 inches wide, with Round Safety Heads, long tables and frame Cast Whole. Equipped with Adjustable Fence and Countershaft. Cut shows rear side view. Full particulars on application. Address for literature.

H. B. SMITH MACHINE CO.

SMITHVILLE, N. J., U. S. A.

Branches: New York, Chicago, Atlanta, Shreveport



COULSON CORNER POST

MODERN STORE FRONTS
ARE OBTAINED BY USING

**The Coulson Patent Store
Front Construction**

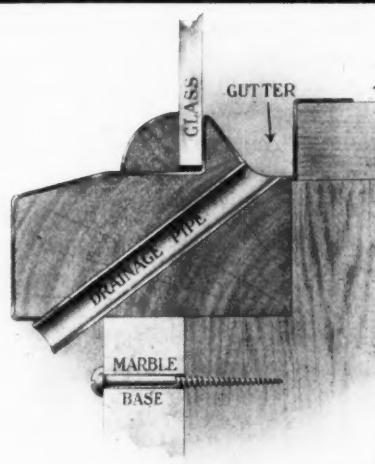
WRITE FOR CATALOGUE E-800, AND FOR PAMPHLET
DESCRIBING THE COULSON DRAINAGE SILL.

J. W. COULSON & CO.

Office and Factory, 284-286 N. Third St., COLUMBUS, OHIO

Branch Office, 202 Builders' Exchange, Dallas, Texas

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

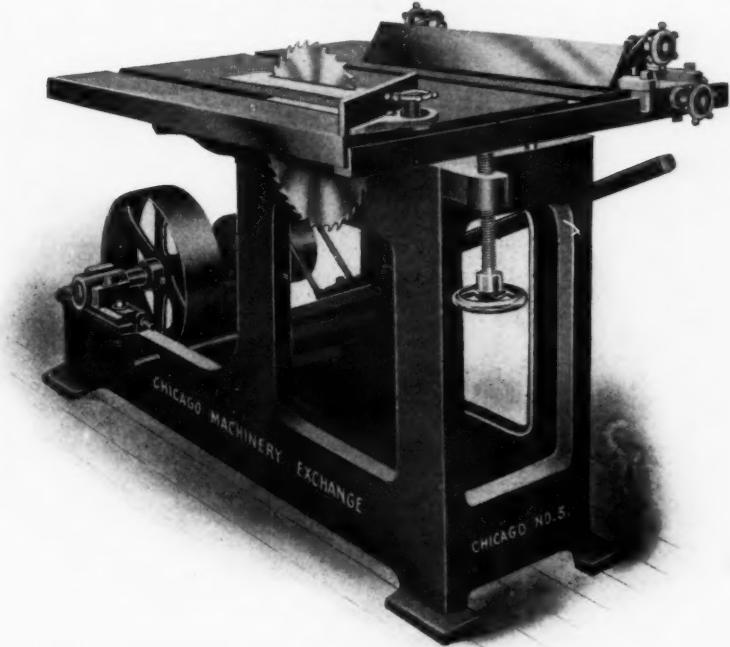


COULSON DRAINAGE SILL

168 Sets of Machines Sold to Contractors Since Jan. 1, 1911

MACHINE No. 1

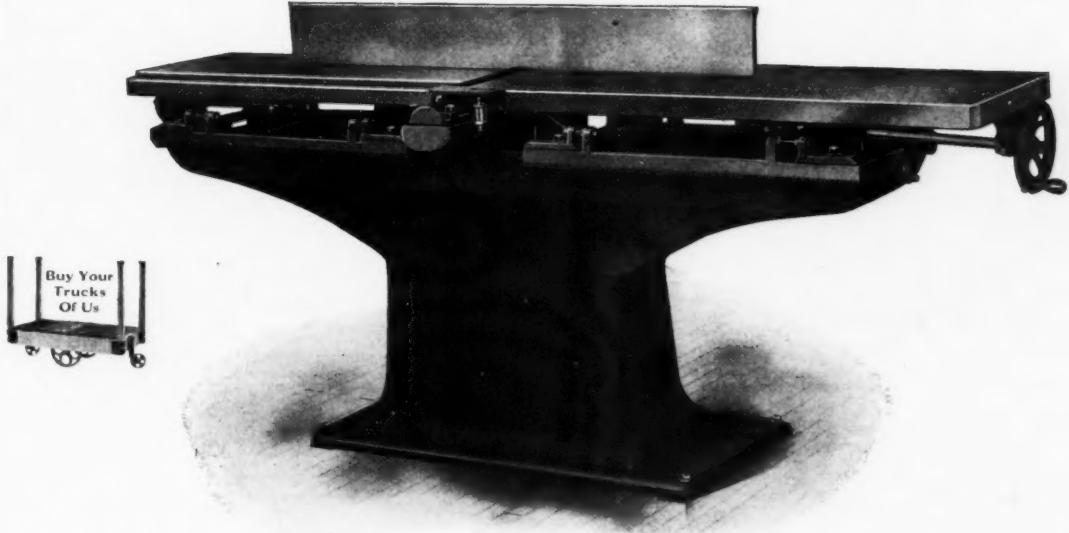
Chicago No. 5 Combination Saw Table



Used for Cutting Off, Ripping, Mitering, Grooving, Boring, Tenoning, Etc.

MACHINE No. 2

Chicago 12" Jointer and Planer

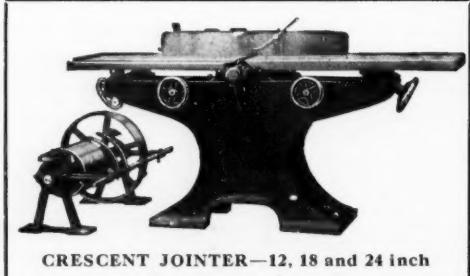


Used for Planing, Jointing, Shaping, Matching, Rabbeting, Grooving, Chamfering, Beading and Making Mouldings.

These Two Machines for \$170.00, including belt for saw arbor, countershafts, 1 14" rip saw, 1 14" cut off saw, 5 boring bits— $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1 pair of jointer knives. Ask for price on one if you cannot use both.

Send for our Special Catalogue today. We issue a catalog of machines especially adapted to Contractor's and Builder's use.

Chicago Machinery Exchange 1219-1227 Washington Blvd.
CHICAGO, ILL.

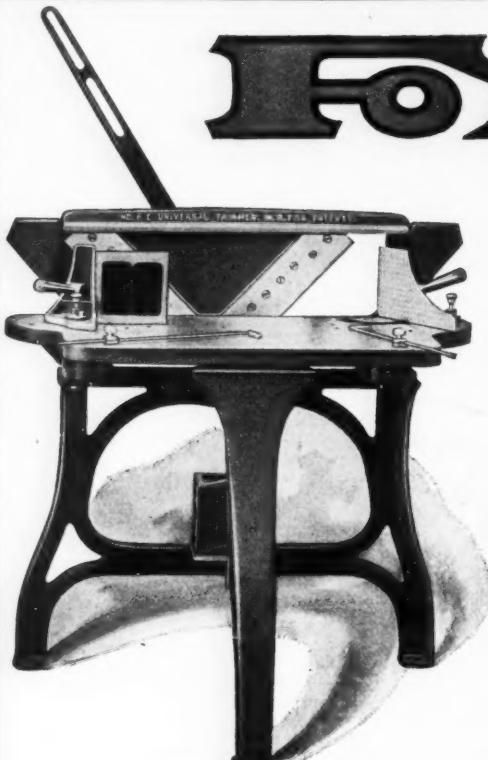

CRESCENT JOINTER—12, 18 and 24 inch

Every Carpenter and Builder Should Have It

We are specialists in wood working machinery. Our big factory at Leetonia, Ohio, manufactures nothing else. We are so situated that we have within the radius of one mile an abundant quantity of lumber, natural gas, sand, coal, coke and pig iron. Every part of our machines is brought to us as raw material and is finished in our own plant. For these reasons we are able to turn out the best of quality at a price below our competitors. The jointer illustrated above is a tool that every carpenter should have. It is used for straightening lumber. It will plane one surface straight and out-of-wind; by use of the fence it will also bring one surface, on dimension stock, square with another, or on an accurate bevel with another. It is not intended for surfacing boards to uniform thickness. For such use a regular planer or surfacer must be used. By use of special cutters a jointer is often used for beading, grooving, making light moulding and other similar work.

Get our 1910 Catalogue and find out all about this splendid tool and our elegant line of band saws, disk grinders, planers, planer and matcher, jointers, shapers, saw tables, etc.

THE CRESCENT MACHINE COMPANY, 224 Main Street, LEETONIA, OHIO



Universal Trimmers

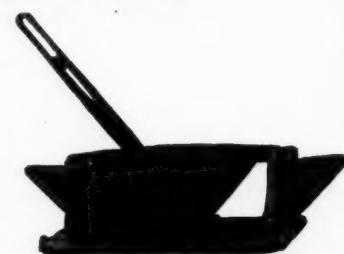
No Pattern Shop Complete Without a Fox Trimmer

We are the original builders of Wood Trimmers, having built the **FOX Universal Wood Trimmer** for 25 years. You receive the benefit of our experience as builders of these tools.

**20,000 Satisfied Users Testify to
FOX EFFICIENCY**

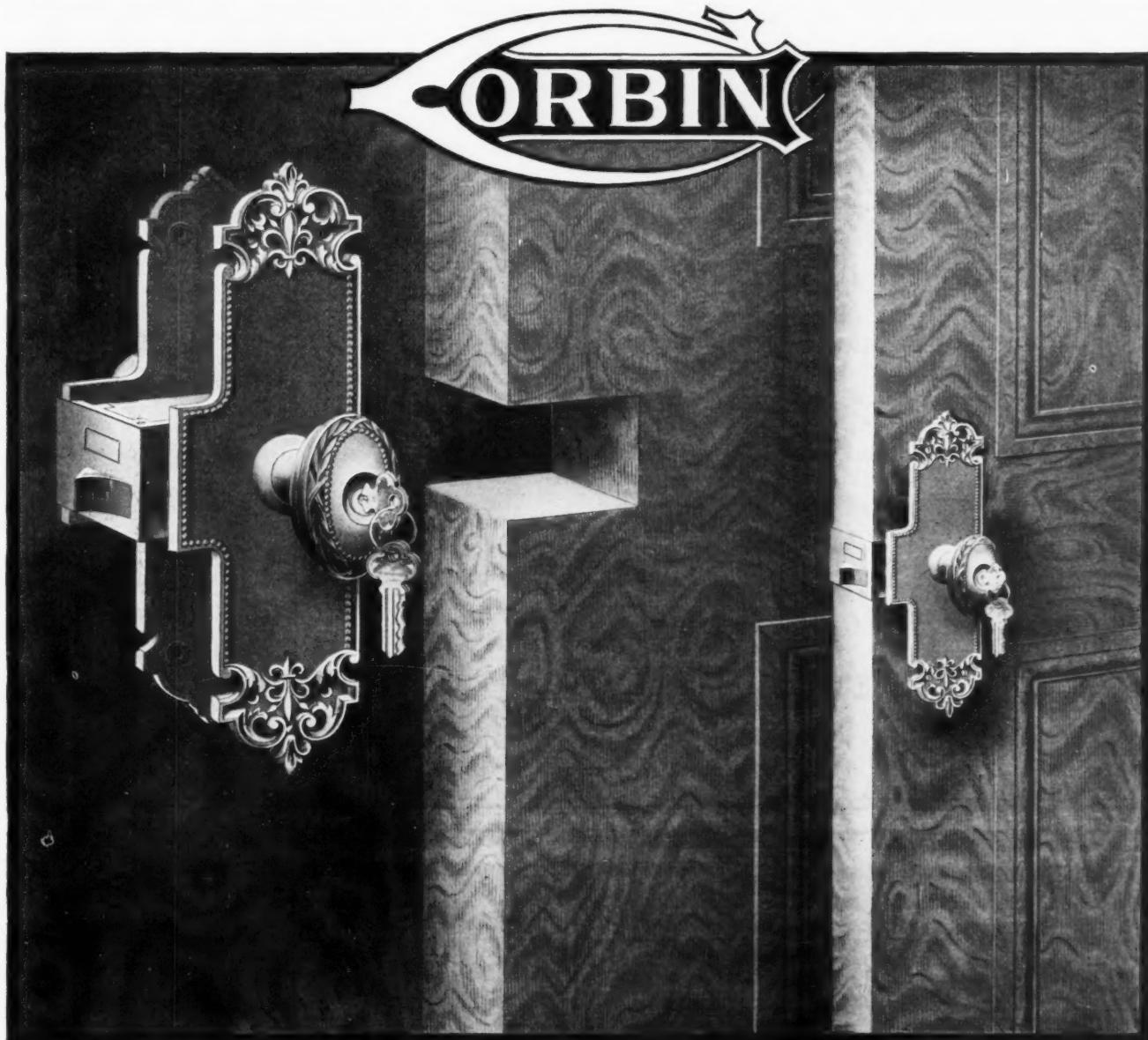
**Prices Range From
\$22.50 to \$150**

**WRITE TODAY FOR OUR COM-
PLET CATALOG OF TRIMMERS**



No. 6-E TRIMMER

2211 FRONT STREET
Grand Rapids, Mich.



The Corbin Unit Lock

IS applied in ten minutes by any good carpenter. It is only necessary to cut the edge of the door as shown, slip the lock set into place and drive four screws through each escutcheon.

It never fails to work properly. All parts are fastened together at the factory and are never detached, preserving the alignment of parts and the nice adjustment made by skilled lockmakers. It has the smoothness and ease of action of a safe lock.

The best hardware dealer in your city sells it and can tell you about it.

Send for book BK 81, The Corbin Unit Lock and Where Used.

P. & F. CORBIN,
NEW BRITAIN, CONN.

P. & F. CORBIN,
of New York

P. & F. CORBIN,
of Chicago

P. & F. CORBIN,
Philadelphia

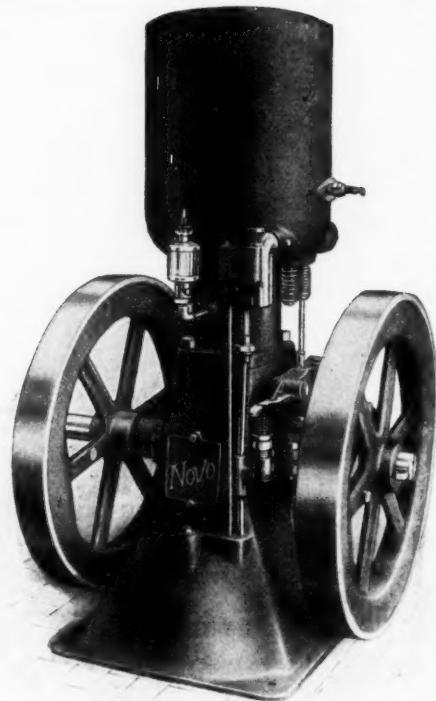
NOVO

The Engine

THE NOVO gasoline engine in four sizes from $1\frac{1}{2}$ to 6 H. P. is especially adapted for use on portable and stationary machinery of every kind. It is **very light in weight, absolutely self-contained**, gasoline being in the base and the water contained in tank around the cylinder, which is guaranteed not to burst from freezing. The **upright form and low height** for vertical engine, and **small size of base** adapts it for use on any machine requiring a self-contained power.

We should be pleased to furnish manufacturers or users of portable machines of any kind with full information, weights and sizes of our different engines.

We make **three sizes** of gasoline hoists for builders' use.



THE HILDRETH MFG. CO., 151 Willow St., Lansing, Mich.
C. E. BEMENT, Secretary and Manager

Ten
Substantial
Reasons
Why You
Should
Purchase the
Climax
Line of
Furnaces,
Stoves and
Ranges
and no other.



1. Because the line has been well and favorably known in every City, Village, and Cross-roads in the United States, for more than forty years.
2. Because the line we sell directly, or indirectly, and have field Agencies to look after, and take care of our business, as well as that of our customers.
3. Because you get a Factory Guarantee on your whole outfit.
4. Because your heater is made by, and installed by practical men—ones WHO KNOW HOW TO DO IT.
5. Because you can burn any kind of fuel in the CLIMAX—even the refuse from other Furnaces.
6. Because the furnaces are made by stove-plate Molders, of stove-plate material; all brand new, and not half old junk.
7. Because of improved principle of combustion, giving you over-draft, down-draft—any kind of draft.
8. Because equipped with large double feed doors—big enough to drive in pony and cart.
9. Because has a Cast Iron Smoke Pipe.
10. Because we sell all our heaters under the strongest guarantee, that they will do the work—or no pay:—BEWARE OF TRAPS FOR THE UNWARY.

THE TAPLIN, RICE-CLERKIN CO., MFRS., AKRON, OHIO
The Only Stove and Furnace Folks Send for Catalogues

Straight-grained cedar that cuts like cheese; smooth, tough leads that make clean-cut, strong marks—that's the way Dixon's Carpenter Pencils are described. Send 16c for generous sample lot 183J.

JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, N. J.

STARRETT
Universal Scraper

Eight sharp cutting edges. Instantly adjusted by ball joint connection. Blade may be instantly set at any angle. Neatest and best scraper made.

Send for free Catalogue No. 186

The L. S. Starrett Co. Athol, Mass. U.S.A.



"A Bit Of Utility"

Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

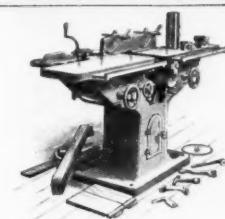
We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

The Progressive Mfg. Co.
Torrington, Conn.



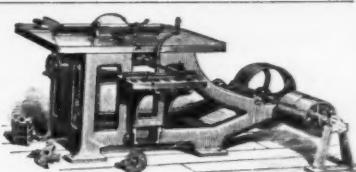
MACHINE BIT.
PAT. SEP. 22, 74.
FEB. 23, 86.

BRACE BIT.
PAT. SEP. 22, 74.
FEB. 23, 86.



CORDESMAN, MEYER & CO.
Manufacturers of
WOOD WORKING MACHINERY
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Write for Catalog Showing Our Line of Machinery for
Carpenters and Builders.
Universal
Woodworker.



Variety Woodworker.

**Every
Carpenter
Needs One**



A new edition of our catalog, the No. 10, is just out and supersedes all previous issues.

It contains 304 PAGES devoted exclusively to our own tools and labor-saving devices.

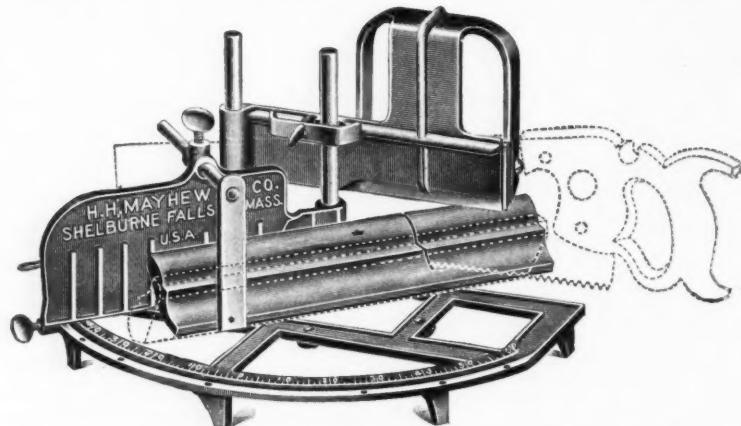
A postal gets it.

Goodell-Pratt Company

Toolsmiths

Greenfield, Mass., U. S. A.

MAYHEW 60° MITRE BOX



This box embodies more distinctive features than any other made

Designed for Simplicity, Accuracy, and Durability.
Strictly a right hand tool for mitring.

Box embodies a new feature in reversing the principle commonly used on other boxes.

Any of three saws may be used — Panel — Hand or Back saw.

Saw guide adjustable for any thickness of saw.

Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.

In mitring duplicate cuts there is no restriction on length.

Will cut compound mitre.

Parts take down into space 10x10x4 inches.

Weight 15 lbs. complete.

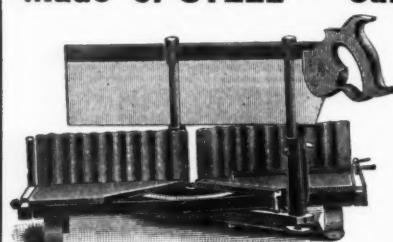
Box contains full directions for use.

PRICE EACH, \$10.00

H. H. MAYHEW COMPANY, SHELBOURNE FALLS, MASS.

GOODELL MITRE BOX

Made of STEEL - Cannot Break



First in Quality and Improvements

Automatic Stops for holding up saw. Corrugated Backs Graduated.

Gauge for duplicate cuts and many other features

Send for Circular "C"

GOODELL MFG. CO., Greenfield Mass.

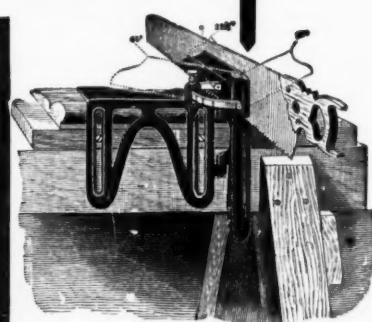
“SEAVEY” MITRE BOX

Cuts
Any
Angle

Meets Every Requirement

Special Offer

On return of this "Ad" and \$2.00 one of these Mite Boxes will be shipped to any reader of "Carpenter & Builder." Offer good for 30 days from date of issue.



LUFKIN Tapes & Rules

are Standards of Accuracy, Durability and Workmanship.

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SAGINAW, MICH.



NEW YORK
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WINDSOR, CAN

Portable — Can be carried in the Tool Kit

Weights
2
Pounds

SMITH & HEMENWAY CO.
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Plant of B. F. Goodrich Co., Akron, O. The largest rubber factory in the world. Covered with J-M Asbestos Roofing.

Made of indestructible Asbestos (Rock) Fibre and Trinidad Lake Asphalt, the great weather-proofer, J-M Asbestos Ready Roofing is literally a pliable stone. Fire, acids, gases, chemical fumes, heat or cold have no effect upon it. It is therefore practically indestructible.

And because of its stone nature, J-M Asbestos Roofing never needs painting or graveling. Its first cost is its only cost. Asbestos being a non-conductor of heat and cold, this roofing keeps a building warm in winter and cool in summer.

Think what a protection J-M Asbestos Roofing would be to your building and what it would save you in paint and repair bills! It is adapted for any building anywhere.

We'll sell you J-M Asbestos Roofing direct from our nearest Branch (also apply it, if desired), if your dealer won't supply you.

WRITE OUR NEAREST BRANCH FOR SAMPLE AND BOOKLET.

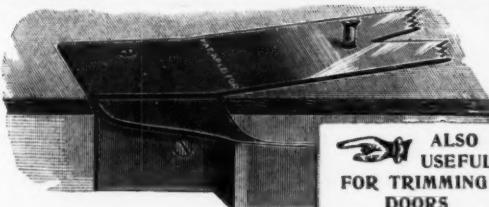
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Manufacturers of Asbestos and Magnesia Products

Asbestos Roofings, Packings, Electrical Supplies, Etc.

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USEFUL
FOR TRIMMING
DOORS

WHIPPLE'S CARPENTER COMBINATION BENCH HOOK

The Handiest Little Tool Ever Manufactured
ARE QUICKLY ADJUSTED TO A TEMPORARY BENCH
EVERY CARPENTER SHOULD OWN ONE

Sent postpaid on receipt of price.

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Postpaid

It Does Not Pay

To do any kind of framing work
WITHOUT THE ABC PROTRACTOR SQUARE

It gives bevels and cuts as well as lengths, and it is the most TIME SAVING and PRACTICAL tool on the market.

The A B C Protractor Square is guaranteed to do what we claim for it, or money cheerfully refunded, if returned in 30 days.

SEND FOR THE tool today, with illustrated directions. PRICE REDUCED TO \$2.00.

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Don't Ask the Dealer for Sash Cord. Ask for
"SILVER LAKE"

and see that he gives it to you. It is impossible to



substitute, as our name is stamped on every foot of cord. Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord, and has been the standard since 1868. No other is just as good.



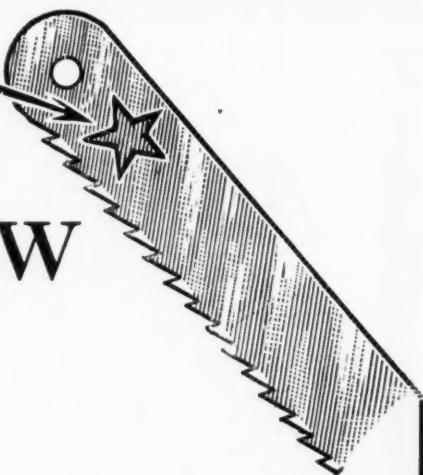
Send us two or more names of persons who are interested in or want to buy Hot Water Heating Plants and we will send you this scale. Back inches are divided into 6, 10, 12, 16, 20 and 40 parts. Also free catalog on request. Mention this paper.

Andrews Heating Co., 1165 Heating Bldg., Minneapolis, Minn.

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STAR HACK SAW BLADES

FOR MACHINE USE, 12 x $\frac{5}{8}$



Surpass all other Blades. Eliminate carrying in stock Blades of varying widths and thicknesses with different numbers of teeth to the inch. They are made of the best material. Possess great strength and durability. Ask for and insist upon getting the Blade with the ★

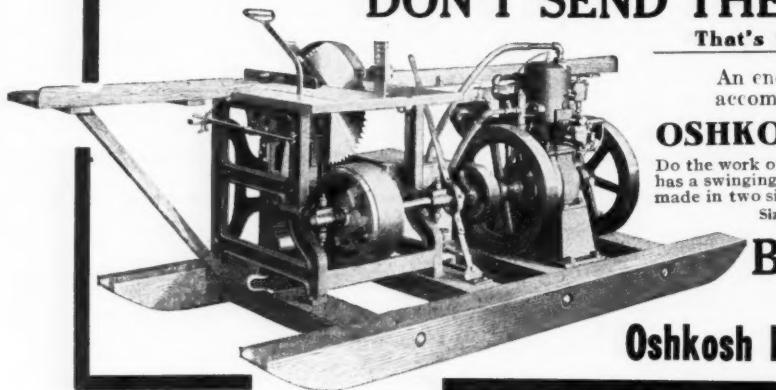
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WRITE FOR LEAFLET.

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DON'T SEND THE JOB TO THE MILL

That's the Expensive Way—the Wrong Way



OSHKOSH PORTABLE SAW RIGS

Do the work of about 8 carpenters, and is the only saw rig known that has a swinging saw that can be held stationary for rip-sawing. It is made in two sizes.

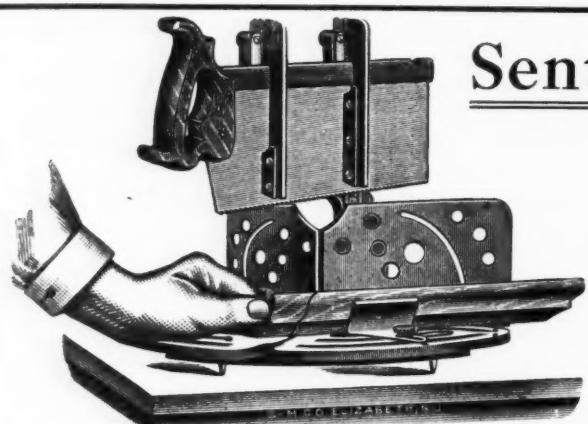
Size No. 1—14" Saw, 6 H. P. Size No. 2—20" Saw, 10 H. P.

Bring the Mill to the Job

That's the Cheaper Way—the Right Way

Oshkosh Logging Tool Co., 316 S. Main Street, OSHKOSH, WIS.

Sent on 10 Days Trial



The Famous Dorn Revolving Miter Box. Will saw compound as well as plain miters any width with a back saw 4 inches wide.

Send for Booklet Called "Tools That Last"



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ELIZABETH, N. J.

AUGER BIT ESSENTIALS
THE FOURTH REASON
 for the Acknowledged Superiority of
RUSSELL JENNINGS BITS



is the size and
 shape of the
SPURS
 and **LIPS**

The spurs are not heavy enough to cause undue friction and thus make the operation of boring laborious, and yet they are not filed down to an extent that renders it impossible to re-sharpen a

great many times. Compare them with the spurs of other bits.

The lips are shaped for strength, free cutting and repeated sharpening.

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Burlington Venetian Blinds
Improve Any House

Not only in appearance, but in increased advantages, they will add value to the building. Give privacy, when put up on windows or porches, yet permit a perfect ventilation. They match any wood or finish and require no pockets. Burlington Venetian and Sliding Blinds, Screens and Screen Doors "keep out the sun but let in the air;"

Write for our special price list and catalog for carpenters and builders.

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Order the Scientifically Prepared—

BAYONNE ROOF AND DECK CLOTH

BEST FOR PIAZZA ROOFS AND PORCH FLOORS

Ask for Sample Book A 6 and Prices

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The Standard Brand of White Canvas
 All Widths—All Weights—Any Quality
 Our co-operative department gives complete
 instruction for laying
BAYONNE or GULF STREAM

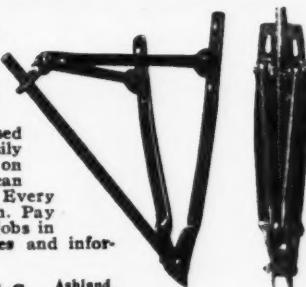
*John Boyle & Co.'s Awning Stripes have
 been the standard for fifty years.*



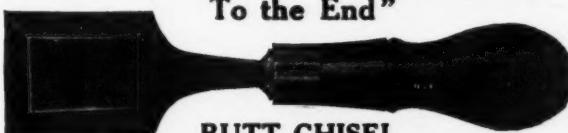
ASHLAND
Folding Scaffold Bracket

Best and strongest bracket made. Used on any kind of siding. Adjusts to any space studding or pitch of roof instantly. Just the thing for carpenters, tinners, painters and brick masons. Folds instantly. No pins or bolts used in adjusting. One bracket easily carries 1000 pounds put up on 4-10d nails. No contractor can afford to be without a set. Every man who uses them orders again. Pay for themselves on first two jobs in time and material. For prices and information, write.

Ashland Folding Scaffold Co. Ashland, Ohio.



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 To the End"**



BUTT CHISEL

The celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequalled by any other made for keen, hard smooth cutting edges. If your hardware dealer does not handle

THE CELEBRATED BARTON TOOLS

Send direct for catalogue. Be sure to specify
'CARPENTER'S CATALOGUE.'

MACK & COMPANY, 20 BROWN'S PLACE
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COMPLETE OUTFIT \$15.00
HAND AND FOOT - POWER
MACHINERY

Our No. 7 Scroll Saw is
 warranted to be made of
 good material and work-
 manship, and to saw pine
 3 inches thick at the rate
 of one foot a minute.

**Send for
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W. F. & Jno. Barnes Co.

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Here's Another New One

"YANKEE"
Push Brace No. 75

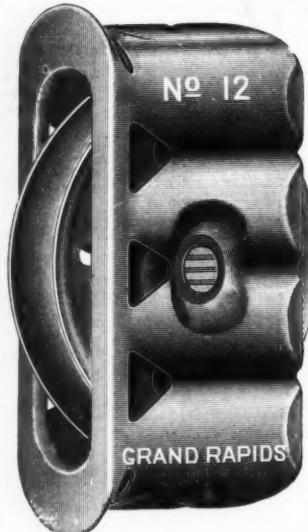
Drives a $\frac{1}{4}$ " auger into hard woods and a $\frac{1}{2}$ " into white pine quicker and easier than a Bit Brace. Drives and draws screws—takes all the small tools and works in close quarters where a Bit Brace cannot be used. Bearing down on the handle drives it with that quick and easy motion of the "Yankee" Spiral Driver.

Have You Seen the "YANKEE" Line?

There are 35 Styles and 75 Sizes each a Labor Saver. Our New Yankee Tool Book tells about them. A postal brings it.

Your Hardware Dealer Sells the "Yankee"

North Bros. Mfg. Co.
(Department A)
PHILADELPHIA, PA.



"GRAND RAPIDS"
ALL STEEL
SASH PULLEYS

No Nails No Screws
Just Bore 4 Holes

The time saved by the "Grand Rapids" will actually pay for the pulleys.

You can't afford to use old style pulleys.

Write for free samples and prices.



Grand Rapids Hardware Co.
Manufacturers
158 11th Street, GRAND RAPIDS, MICH.

This fastening is more secure than any number of screws or nails could make it. Saves about 15 per cent, too. S C R E W S C O S T M O N E Y

A New

Hollow Chisel Mortiser

The superior mechanical principles entering into the construction of this new tool enable it to do as clean and accurate work up to $\frac{3}{4}$ inch square and 6 inches thick, as a big, heavy tool.

Reasons why this machine appeals to Carpenters, Contractors, Builders and Retail Lumbermen:

- 1st. Entirely Self-contained.
- 2nd. Occupies small floor space.
- 3rd. Uses little power.
- 4th. Easy and simple to operate.
- 5th. Works smoothly; no pounding or jarring.
- 6th. Under instant control of operator.
- 7th. Table angles 40 degrees.
- 8th. Automatic disappearing stops eliminating the necessity of marking off stock in duplicate work.

No. 272. Vertical Hollow Chisel Mortiser

Price and Details Free Upon Request—Write To-Day

J. A. FAY & EGAN COMPANY
545-565 WEST FRONT STREET
CINCINNATI, OHIO



G. & M. Trestle Irons

(Patented Aug. 25, 1903)

Made of best quality malleable iron, it is non-breakable, light and portable.

By removing bolts **A** trestle will fold together for convenience in transportation from one job to another or from one room to another. Also for storage purposes no space is lost.

G. & M. Trestle Irons enable any one with a saw and auger bit to set up trestle in 1-5 the time it takes a mechanic to make an ordinary trestle.

No planing required. Timbers 2x4 in the rough are all that are required.

FOR SALE BY

ORR & LOCKETT HARDWARE CO.,

14-16 W. Randolph St.

ESTABLISHED 1872

CHICAGO, ILL.

Also agents for the Acme Floor Scraping Outfit, Buck Bros.' Chisels, Barnes Foot Power Woodworking Machinery, Jennings Take Down Squares, Job Pugh Hand Made Auger Bits.

Send for our Catalog A of CEMENT TOOLS

NOTE—Our Special brand Clamps, have notches on the bottom of the bar, instead of on the top.	
Per pair, 1 foot.....	\$2 70
" 1 $\frac{1}{2}$ "	2 85
" 2 "	3 00
" 2 $\frac{1}{2}$ "	3 75
" 3 "	4 00
" 4 "	4 50
" 5 "	5 00
" 5 " heavy.....	7 50
" 6 "	8 50
" 7 "	9 50
" 8 "	11 00
" 9 "	12 50
" 10 "	14 00

These clamps have steel bars and screws and **malleable** iron parts.

The New Adjustable and Perfection Clamps are made in the following lengths and sizes:

2 $\frac{1}{2}$, 3, 4 and 5 foot have 1 $\frac{1}{2}$ x $\frac{1}{4}$ inch bars.

5, 6, 7, 8, 9 and 10 foot have 1 $\frac{1}{2}$ x $\frac{1}{2}$ "

Joiners' Clamps—1, 1 $\frac{1}{2}$, and 2 foot have hand-wheels for rapid work. 1 $\frac{1}{2}$ x 3-16 inch bars.

In ordering parts always make sketch, to avoid delay.

Hargrave's New Adjustable SPECIAL Clamp.



Hargrave's Perfection SPECIAL Clamp.



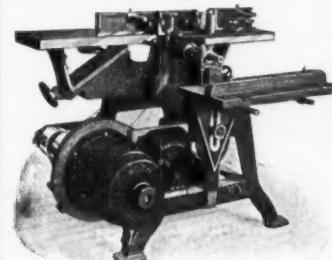
Hargrave's Joiners' SPECIAL Clamp.



THE CINCINNATI TOOL CO.,

CINCINNATI,
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Next machine you buy, order a **Rothmotor**



to drive it individually.
You will be pleased.
You will be gaining
some profitable experience in economy.

Ask
ROTH BROS. & CO.
1422 West Adams Street,
CHICAGO, ILL.

NEW YORK OFFICE:
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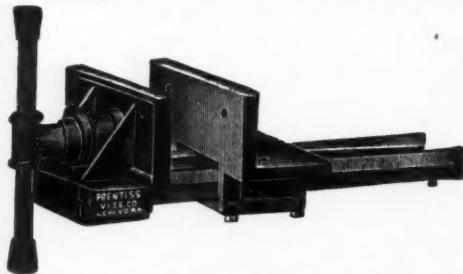


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Rapid Acting Wood Workers Vise.
Cheapest for you, because best.
You can see them at your dealers.

Write us for booklet.

RICHARDS - WILCOX MFG. COMPANY
AURORA, ILL.

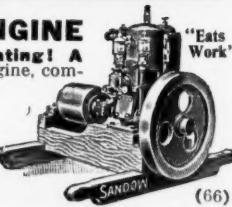
BLAKE QUICK ACTING VISE

For Cabinet Makers and Wood Workers. Simplest—Strongest
—Cheapest—Best

Send for Catalogue of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
106-110 La Fayette St., New York, U. S. A.

Let SANDOW Run It!**WONDERFUL WORK ENGINE**

Farmers and Shop Owners, Stop Sweating! A few dollars gets this grand little work engine, complete and ready to run. Cream Separators, Corn Shredders, Grist Mills, Feed Mills, Dynamos, Printing Presses, etc., etc. Gives a lifetime of steady service! All Sizes: 2 to 20 h.p. No cranking! No cams! No gears! Only 3 moving parts. Finest construction. Thousands in use. Guaranteed 5 years. Write for special introductory proposition.



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Do Not Buy a Floor Scraper

Until you have looked into the merits of the

HAVEN FLOOR PLANER

The Scraper that Planes. Banishes heavy weight pulling—planes and smoothes at one operation.

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**Let us send you this book for
FIVE DAYS FREE TRIAL**

SEND no money—just mail us your name and address. Your book will reach you by return mail. Keep it 5 days—use it—then either send one dollar or return the book.

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OF
ESTIMATING DATA**

EVERY MAN IN THE BUILDING TRADE NEEDS IT

Name.....
Address.....

The Builders' Auxiliary Co.
325 Old South Building, BOSTON, MASS.

**Bicknell's Jointer,
Saw and Combination
Machine**

SIMPLE DURABLE

Not too many machines in one but enough.

Write for catalogue.

BICKNELL MANUFACTURING & SUPPLY CO.
Originators of Handy Tools JANEVILLE, WIS

When **\$13.95**

(if you send cash with order) pays for a dozen 4 ft.

brackets, every pair of which will carry a ton in weight without even springing, does it pay to go on using wooden brackets, or putting up staging?

Consider also that once equipped with these, you don't have to be bothered continually with broken or worn out brackets, for **The Taylor Brackets** last a lifetime. Besides, there's a big gain in time: one man can put them up and take them down alone.

If you'd like to be shown, write for terms of our special trial offer. It will pay you.

When

**Buying
CLAMPS**

Ask Two Questions

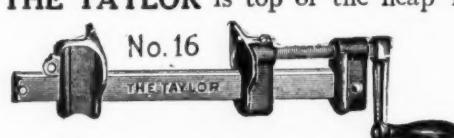
How Quickly Will they Work?

It pays to get quick-acting, self-locking clamps, for they double or treble the output of your men, and save money in wages.

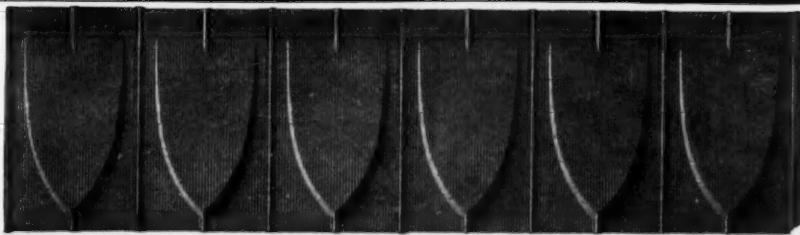
How Long Will They Last?

Everyone knows a clamp that is not durable is dear at any price; for one well made clamp will outlast many of the other kind, and in the end the best clamp is the cheapest.

THE TAYLOR is top of the heap in both these respects, and we'd be glad to mail you our catalogue telling you more about them and showing 22 different styles.



JAMES L. TAYLOR MFG. CO., Poughkeepsie, N. Y.
U. S. A.

WATER-FIRE AND
LIGHTNING PROOF**TITELOCK**
TRADE
MARK**METAL
SHINGLES**MAKE THE BEST
ROOF COVERING

The nature
of embossing
and the crimping
lengthwise of the
plates insure rigidity
and strength, also pro-
vide perfectly for the
expansion and con-
traction of the metal.

SEND FOR SAMPLES
AND BOOKLET.

"Invisible Joint"
STEEL CEILINGS
SEND FOR CATALOG.

MILWAUKEE CORRUGATING CO.
MILWAUKEE, WIS. - KANSAS CITY, MO.

EAVES TROUGH, CONDUCTOR
PIPE, ELBOWS, RIDGE
ROLL, SHEET METAL
ROOFING AND SIDING, ETC.
SEND FOR PRICE LIST.



PERFECTION E L E V A T O R S

The Best Value for the Money in the World
Mechanically Correct

Dumb Waiters, Carriage and Store Elevators, Sidewalk Hoists, Etc., Etc.

Our Elevators are noted for their EASY RUNNING and SERVICE-
ABLE QUALITIES. They are practically self-contained, and can be
erected by any carpenter in a few hours. We furnish plans for erecting.

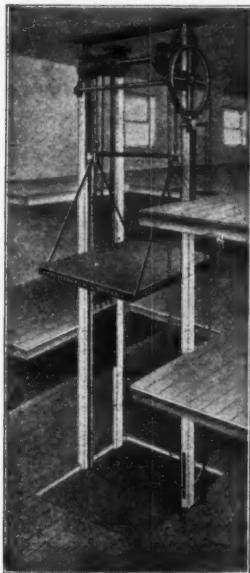
The Low Cost Will Surprise You

State your requirements, giving capacity, size of platform and number
of feet to travel and we will name our lowest money saving estimate.

SIDNEY ELEVATOR MFG. COMPANY, SIDNEY, OHIO

The New Otis Metal Hand Power Elevator

FOR STORES



WORKS EASIER AND
LASTS LONGER
THAN OLD STYLE
WOODEN ELEVATOR

**\$75.00
TO
\$95.00**

SEND FOR
FOLDER 26

**OTIS ELEVATOR
COMPANY**

NEW YORK CHICAGO
SAN FRANCISCO
And All Principal Cities

Dumb Waiters

The combination of a pulley, a box, a cord, and a bunch of
sash weights does not constitute a dumb waiter, but does con-
stitute a first class man-trap especially effectual for maiming
women and children. Such combinations were in vogue at the
same period as the well sweep.

Send to the Sedgwick Machine Works, 128 Liberty Street,
New York, for their Catalogue "K" (which is furnished free on
request) and shows a complete line of Dumb Waiters and Hand
Power Elevators. Then when an occasion for a dumb waiter
comes you will be posted and if there are any special conditions
or requirements they will furnish blue-prints and special in-
formation without charge. The Sedgwick Machine Works are
the leading specialists in their line and it will pay any builder
to be posted.

The American Combined Level and Grade Finder



All progressive and up-to-date Carpenters, Contractors and
Mechanics should have one of our levels and grade finders.
An instrument with which at one glance you can get the true
slant on any line or grade, either in degrees, inches or percentage,
or all at one time, and will at once give the exact distance
needed to plumb up to a true level.

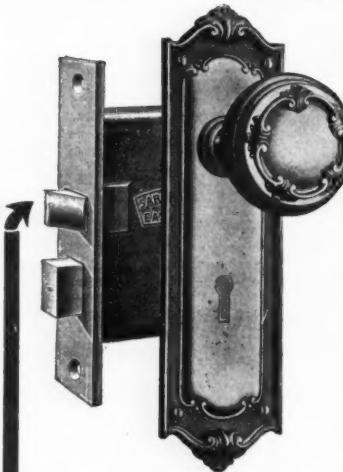
The most practicable, durable and convenient instrument of
the day. In addition to ordinary mechanical work the Ameri-
can Combined Level and Grade Finder will prove serviceable in
cutting off rafters, laying off and leveling buildings, getting height
of any object and is useful in dozens of ways.

The longitudinal recess shown in cut is well worth the low price
of the instrument.

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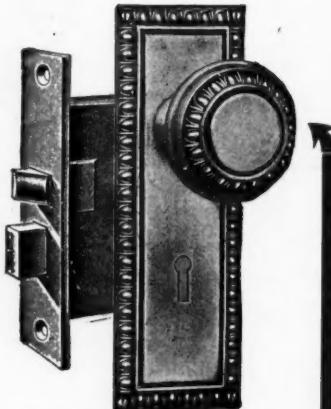
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DON'T PUT SASH WEIGHTS ON YOUR WINDOWS—THEY ARE OUT OF DATE

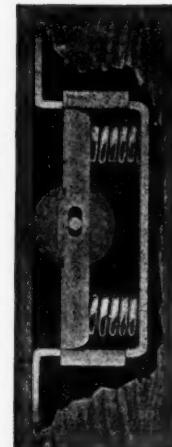
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Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

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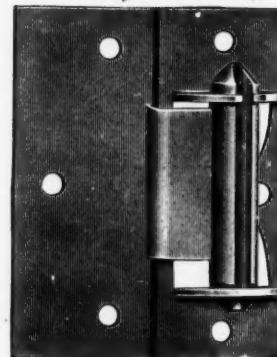
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These furnaces will carry from 5
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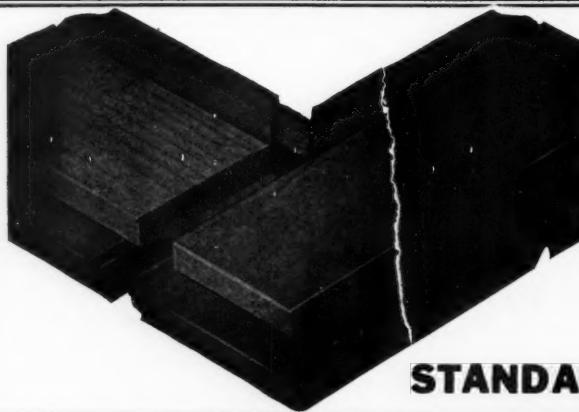
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GEO. H. BISHOP & CO., Lawrenceburg, Indiana, U.S.A.
Makers of

Fine Hand Made Hand Saws

The Purest of Quality Our
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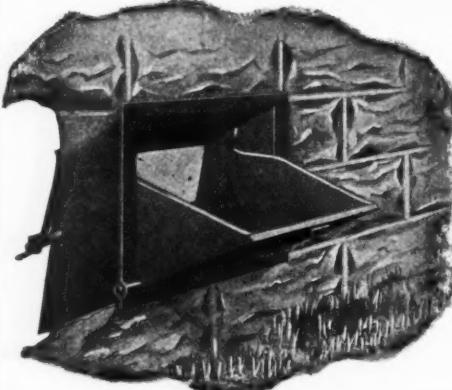

IN introducing our "GREYHOUND" brand of Saws to the trade, we have departed from our usual custom in naming instead of numbering the saw. This saw will be known as our "GREYHOUND" and will be the only Bishop brand of saw known by name.

We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. We had to name it and we have christened it Bishop's Refined "GREYHOUND" Steel, associating our trade mark with its name. We have in this "GREYHOUND" Saw blade a purity of steel that is tough, tempers accurately and even—together with the special way it is made—enables us to guarantee that this "GREYHOUND" brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our "GREYHOUND" brand of saws in use.

Made in both straight and skew back. Packed One in a Box.

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

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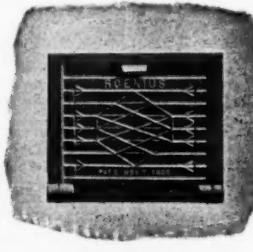
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Nearly 20,000 In Use

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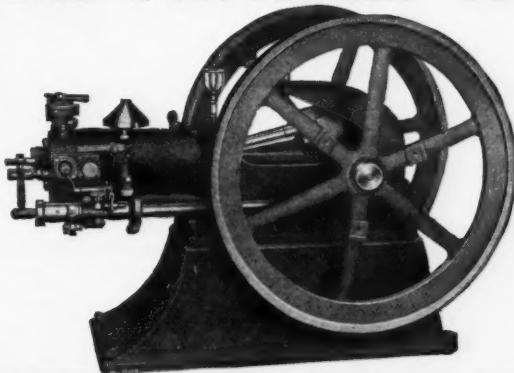
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READ
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OTTO GAS AND GASOLINE ENGINES

THE LETTER

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Your engine has been running daily in our shop for the past year, and in comparing the cost of power of former years with this year, we find there is a saving of over 50% or in other words **the engine has paid for itself the first year.**

Yours very truly, A. Nacke & Son.

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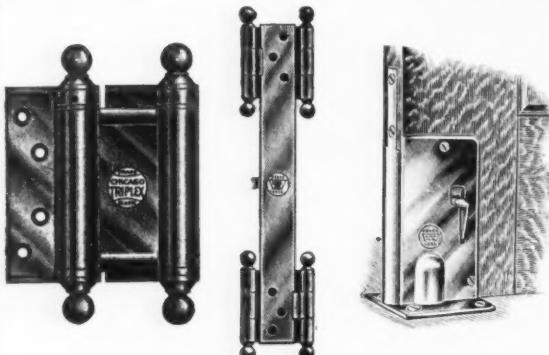
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Seneca Falls, N.Y., U. S. A.



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It can be used on any size bit, up to $\frac{3}{8}$ inch.

No carpenter's tool chest is complete without it. Absolute satisfaction guaranteed. See it at your hardware dealers or

Send 35c. in stamps for sample to

OTIS A. SMITH

ROCK FALL CONN.

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When a man buys ordinary ready roofing he usually neglects to paint it and after three or four years he comes back to the dealer with a protest. It is human nature to neglect painting roofs.

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There is nothing to neglect in the case of Amatite. Amatite has a peculiar surface—a sort of plastic concrete made of pitch and mineral matter.

This surface is plastic enough so that the material can be rolled up into handy

rolls in the usual manner and handled just like any other ready roofing. When unrolled on the roof and nailed down it presents to the weather a continuous surface of mineral matter and pitch. On this surface wind, rain, storm, heat and cold have little effect. Year after year it looks up to the sky undisturbed and unaffected. It costs nothing to maintain and relieves the owner from all responsibility.

Dealers can improve their business by selling Amatite and buyers make a good bargain when they buy it. The price of Amatite is less than that of most painted roofings of less weight and durability.

Sample free on request.
Address our nearest office.

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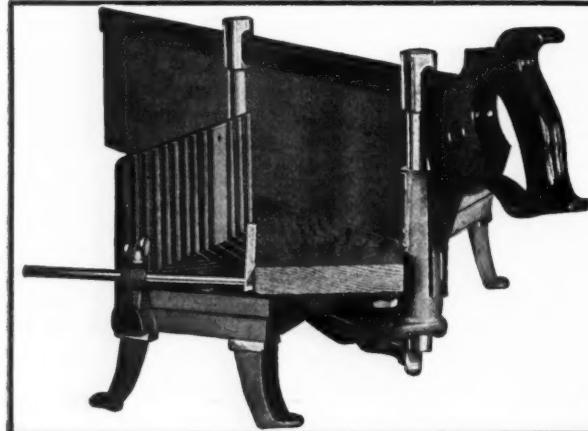
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Illustrated circular on request.

H. C. MARSH COMPANY

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Rockford, Illinois



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Building Paper**

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**The
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Building Paper**

American Carpenter and Builder

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VOL. XI

MAY, 1911.

No. 2

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Ambition—the Chief Corner Stone

"YOUR lives," said Judge Newcomer, of Chicago, to a class of carpenters' apprentices at the closing exercises for this year, of the Chicago Building Trades Apprentice School, "are built on four corner stones, and chief among these is ambition."

And Judge Newcomer is right, as was clear to all as he proceeded. A youth without ambition is suffering from premature old age. He will never get anywhere. He will never do his work well. He is foredoomed to failure and dependence. Life may be worth much, but he is worth nothing. He is a constant burden for the helpful and the efficient to carry, an irritating lump and hummock.

Youth must be ambitious if the race is to progress, and the middle-aged and the old are most fortunate when they retain their ambitions. The little place in the country is all right, provided there is a purpose to make something of it. It must be a place to work, not a place to loaf. If it is sought merely as the last station on the way to the grave its advantages over a cheap lodging in the city are problematical.

Fight apathy always and everywhere as a deadly foe—start with ambition at 20 and call up the reserves at 70. If you have lost some of your physical strength and energy make up for the loss by an appeal to your own reason and experience as aids. They will be witnesses at every stage for the alert and the purposeful.

The young carpenters whom Judge Newcomer addressed may be sure that this is one of the most convincing lessons of life. They should have the native force to make good use of it against the philosophy of weariness, disappointment and despair, and should rejoice in every honest ambition with which they are blessed.

♦
Make Those Pay Who Are to Blame

AN explanation of the fact that fire losses in the United States are about ten times what they are in Germany, can be found in the much greater responsibility for fires fixed upon tenants, builders and owners of property abroad.

An American gentleman, temporarily living in Berlin, was awakened by smoke and found that a fire originating in a room over him was eating its way through the ceiling of his dining room. The blaze was extinguished with chemical apparatus without any water damage and without needless destruction of walls and furniture.

Meantime a careful investigation was made by officials and the next morning the man who turned in the alarm was sent for and taken before a fire marshal with inquisitorial powers. The examination of all involved showed that the fire started in a hot coal which had dropped from a laundry stove in the attic and rolled upon an unprotected wooden floor. The tenant proved that the stove was an appointment of the build-

ing, provided by the landlord, and that it was neither his duty nor his privilege to change it. The landlord proved that he had recently purchased the building under the usual guarantee that all laws and ordinances had been complied with in construction and appointment, that this stove had not been changed and that his attention had not been called to any condition involving a fire risk.

The builder from whom the owner purchased was then called and had to admit that he was responsible for the setting of the stove as the police had found it, and that he had violated the law in neglecting to provide a suitable metallic hearth of the required kind and dimensions between it and the floor. This responsibility was brought home to him by the assessment against him of the damage to the furniture and property of the tenants, together with the estimated cost to the city of responding to the alarm and extinguishing the fire, rounded out by an exemplary fine of 500 marks as a reminder that German laws are intended to be observed.

The builder was not required to pay for the damage to the building, it being held that while the owner had not committed the violation of law which caused the fire, he had been neglectful in not discovering and correcting it, and for that reason should pay for his own repairs. He was informed that only the fact that he had owned the building for a short time saved him from a fine in addition.

Such laws and such enforcement explain the per capita fire loss of 30 cents in Berlin and \$3 in Chicago. American "freedom" is not yet ready for such restrictions, but it pays for its independence in a fire waste of a quarter of a billion dollars a year, to say nothing of the loss of life, and the high taxes made necessary by the existence of such conditions. If the person responsible for fire in this country were made to defray the cost of extinguishing the blaze, the criminal carelessness which now exists would be greatly reduced, as would the taxes necessary for the support of the fire departments.



New Officers for Master Slag Roofers

The annual meeting of the Association of Master Gravel and Slag Roofers of America was held in the St. Charles Hotel, New Orleans, La., February 7 and 8. At the closing session the following officers were chosen for the ensuing year:

President, William Murtfeld, Boston; First Vice-President, John L. Jones, Chicago; Secretary, L. B. Sibley, 17 Battery Pl., N. Y. City; Executive Committee: Ralph Esau, Chicago; H. C. Smithers, Indianapolis, and M. Savage, Kansas City, Mo.

The meeting was made the occasion of a presentation to L. P. Sibley of a silver service, as a token of appreciation of his three years' valuable work for the organization as its secretary.



THANK God every morning when you get up that you have something to do that day which must be done, whether you like it or not. Being forced to work, and forced to do your best, will breed in you temperance and self-control, diligence and strength of will, cheerfulness and content, and a hundred virtues which the idle will never know.—*The Gimlet*.

Filling Her Program

"Ah say, Miz Mandy, am yo' program full?"
"Lordee, no, Mr. Lumley. It takes mo' an a sandwich an' two olives to fill mah program."—*The Coyote*.

Putting It in Practice

"Son, I hear you have joined the Boy Scout movement."

"Yes, dad."

"Well, s'pose you scout ahead and see if your mother is sitting up for me."—*Louisville Courier-Journal*.

Bliss

Mrs. Quackenness—Am yo' daughter happily mar'd, Sistah Sagg?

Mrs. Sagg—She sho' is! Bless goodness, she's done got a husband dat's skeered to death of her!—*Western Christian Advocate*.

As Any Amateur Might

Below is a letter written by a man, about to begin a garden at his suburban home, to a tradesman who sells seeds:

Dear Sir:

Having one-quarter acre of ground which is not used for anything but growing stones, I wish to make it into a profitable and attractive garden.

Please ship me:

One dozen strawberry seeds.

One dozen plum seeds.

One concrete path, winding.

One bee, with hive complete.

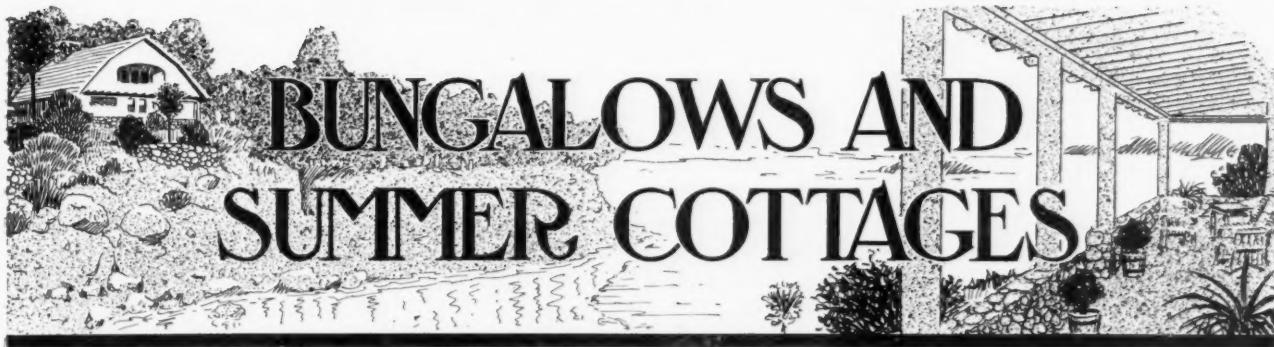
Ten square yards of grass.

Six wall-flowers, with six pieces of wall.

One safety lawn-mower, with patent apparatus for converting it into a safety razor.

Also please send me enough baskets to hold the strawberry and plum crops, and side and back combs for the honey. The grass should be green, and not the withered kind I note in so many gardens.

The seeds should be of some flavor that chickens do not like. Yours truly, JOHN SMITH.
—*Examiner*.



Ideas for Design, Construction and Finish

AT this time of the year our thoughts naturally turn to summer outings; and many are already planning the details of some little rustic lodge or cottage to be built somewhere in some out-of-the-way place, where the summer can be spent in real peace and happiness. For the assistance of these—to show them in a practical way how summer cottages have been built and finished ingeniously, we have selected three examples for purposes of illustration.

Those who are going to have summer cottages built this season, as well as those who are intrusted with their designing and construction, will find a great many worth-while ideas in these photographs and plans.

The three are just about as different, one from another, as summer cottages could well be; and are the more valuable on that account, since they illustrate a wide range of work. One is a six-room, two-story forest lodge, with the second floor apartments opening from a balcony in the high living-room. One is a very simple, single room shack. And the third is a large, expensive and finely finished sea-side summer home.

A Camp Built for Comfort

In a secluded spot about a mile back from the highway, leading from Middleton to Salem, Mass., and directly overlooking the picturesque shores of the Ipswich River, stands the all-the-year-round camp de-



Huge Field Stone Fireplace Gives Warmth and Cheer. Interior of Wm. P. Hubon's Woodland Camp.

signed and owned by Mr. William P. Hubon, of Salem. Here, in the summer months, Mr. Hubon and his friends congregate to live a carefree, open-air life, and here, in the winter season, they come to spend the week-ends and enjoy the numerous and wholesome benefits of outdoor life which the vicinity affords.

The main feature of the interior—and this is really the thing of first importance in any summer cottage—is the large, easy apartment, the lounging hall or living-room. This one is left open to the roof, showing the rafters. Its walls are sheathed vertically with hard pine, shellacked. The feature of the room is the great



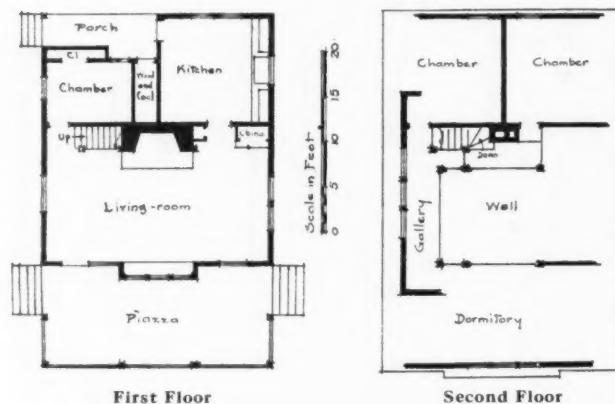
Woodland Camp with Two-Story Living Room; Cost \$1600

The little camp shows an exterior finish of weather-stained shingles, with white painted trim. Across the front extends a veranda, fifteen feet in width by twenty-seven feet in length. In the summer season,

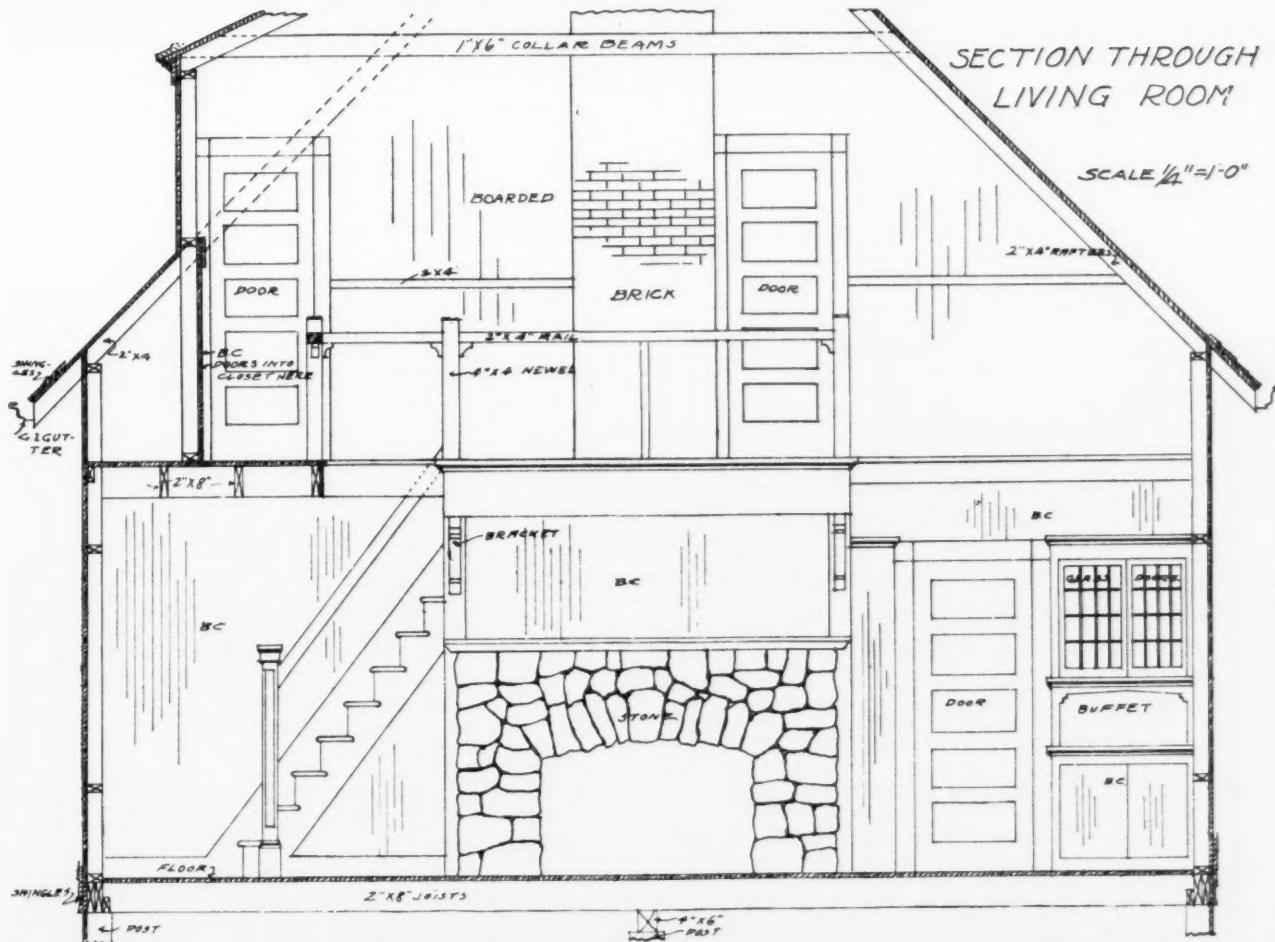
open fireplace arranged midway at one side, measuring twelve feet in width, built of rough fieldstone picked up near by.

Another striking feature, a favorite for forest camps of this kind, is the balcony that extends around three sides of this room, and serves as hallway for the bed rooms and the space over the front veranda, which is ordinarily used as a sitting-room, but can be used as a sleeping apartment when needed.

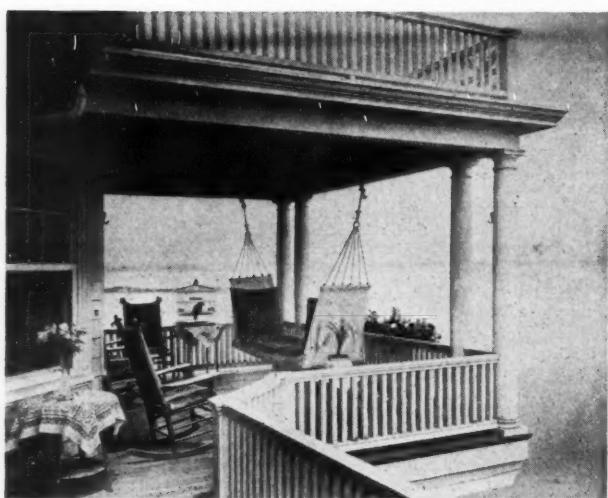
Many summer cottages always seem to be short on storage space (it's surprising how many traps and things, hammocks and cushions and odds and ends of various kinds, there are pertaining to "camping it" which need places to be tucked safely out of the way). This cottage is generously and ingeniously supplied. There are built-in lockers all along the balcony and in connection with the sleeping rooms; there is a big linen and china cupboard in the dining-room corner of the main room; there is a long box window seat with hinged cover, besides more lockers in the living room; and in the model kitchen are shelves and a set of drawers for kitchen supplies, and on the wall space above is a glassed-in cabinet to hold dishes, etc. By



this pleasant open-air space serves as the dining-room. It is covered by the projection of the second story. Beneath this veranda is a storage space for canoes, etc., effectively concealed from view by a deep lattice-work.



Cross Section Showing Method of Construction, and Interior View of Living Room with Balcony in Woodland Camp



Veranda Overlooking the Bay

the stove is a broad shelf supported on hinges, and so contrived that when not in use the supports can be lowered and the shelf rests flat against the wall. On the opposite side a closet four feet deep is used for coal, and on one side of the wall an enclosed space eighteen inches deep is arranged and divided into two parts, the upper portion used as a medicine closet, the lower part for rubbers and umbrellas.

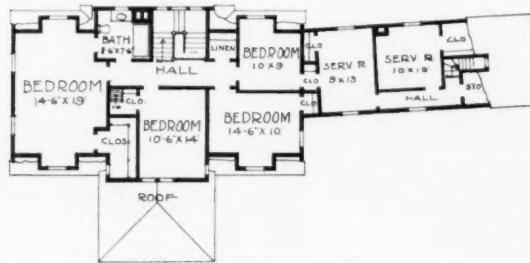
The camp altogether is most conveniently planned and happily fulfills the purpose of its designer to obtain as much space as possible and yet have abundant storage room. Its cost complete was \$1,600.

A Beautiful Summer Home

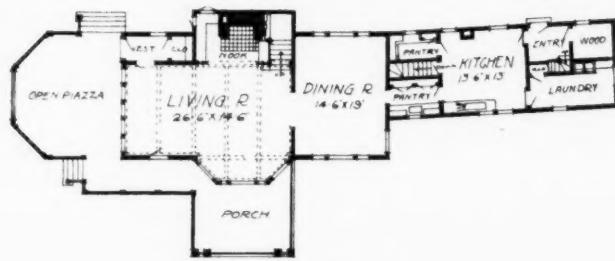
Crowning a rocky promontory at the extreme edge

of Crowninshield Point, at Nanepashemet, along a section of Marblehead Bay, where the beauties of shore and ocean are most charmingly intermingled, stands "The Anchorage," the summer home of Mr. B. B. Crowninshield, the well-known naval architect.

It is built to follow the contour of the rugged site. On the under side of the sea front is arranged the



Second Floor Plan



First Floor Plan

cellar, bath-boxes and boating apparatus, and leading from here to the short stretch of sandy beach below is a long flight of wooden steps.

The entrance door opens upon a small vestibule, which connects with the living room, a spacious apart-



Summer Home of B. B. Crowninshield on Marblehead Bay

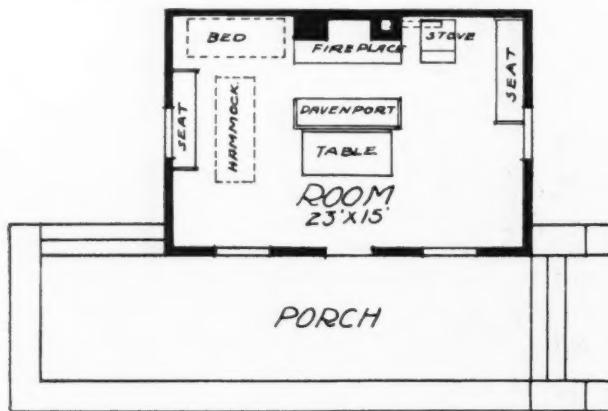


The Sea Front of B. B. Crowninshield's Summer Home



View of Main Living Room

ment occupying the greater portion of the lower story. It is finished in cypress, with paneled walls and ceiling ribbed and beamed in a picturesque manner. A feature of the room is the great open fireplace arranged within the inglenook at one side, which is most



Floor Plan

attractive with its flooring of brick, and built-in seats.

Opening from the living room is the dining-room, finished in North Carolina pine, stained a soft brown, with panelled walls and cross-beamed ceiling. The service department is located in the wing of the house,

A One-Room Bungalow

Nestling among the rocks on the picturesque shore of Cohasset, Mass., is a most delightful little one-room bungalow, the favorite retreat of two college boys, sons of Congressman Eugene N. Foss. It was designed by them as a place where they could entertain their friends at week-end gatherings. It was built during spare moments one winter, at a cost of \$800.

It faces the ocean, and the slope of the beach made it necessary to build a front foundation wall of stone, some six feet deep, while the rear rests almost on the ground. A broad veranda extends across the entrance front, and is an inviting spot on sultry summer days. Dutch doors give entrance to the interior of the bungalow. This is a single room, which serves the three-fold purpose of living-room, bedroom and kitchen. The interior finish is spruce stained dark. The ceiling is unfinished, the rafters showing.

The central feature of the interior is the huge stone fireplace. Along two sides of the room, settees have been constructed and fitted with cushions. At one side of the fireplace are bunks of sailcloth hung by ropes. They are fitted with mattresses, and with a ship's hammock, which hangs just in front of them, constitute the sleeping quarters of the bungalow.



One-Room Bungalow on the Shore near Cohasset, Mass.; Costing \$800, the Simplest and Most Delightful Camping Shelter that can be Built

and consists of butler's pantry, a large kitchen, finely arranged laundry, and rear lobby, all trimmed with yellow pine. On the second floor are four large chambers. The house was designed by Mr. Arthur Bowditch, of Boston, and its cost complete is said to have been \$6,000.

Reliable Old Bill

My friend, Bill Toothberger, is neither in the *Blue Book* nor the *Directory of Directors*.

His social aspirations consist in a desire to get out of life the fullest measure of right enjoyment, and his financial ambitions in paying his just debts.

The position he holds is fairly important to the institution he serves, but the Past Grand Master of the Improved Order of Unknowners has him beat to a frazzle when it comes to publicity.

Yet I heard his boss say that if he had six men like Bill the business would be fifteen times as big as it is, or even bigger.

For Bill does not stop with filling his place, which is where most patrons of the pay-envelope take down their suit cases and get off the train. No, he has

in existence. The dust of precipitated promises gets so thick at times that it's hard to breathe comfortably.

This floating supply is not enlarged by Bill, however.

Bill goes out to lunch at noon, and is scheduled to be back at one o'clock, like a multitude of other men.

The difference between Bill and the majority of the multitude is that he IS back at one—not just coming up in the elevator as the clock strikes, or just



Interior of the Foss Shore Bungalow. Note Hanging Bunks

enlarged his place. And there is this about him that has produced decidedly pleasant sensations in my top story—he is reliable.

Now, a reliable man is a "gem of purest ray serene," even if most of them are domiciled in the "dark, unfathom'd caves of ocean," or regions equally inaccessible.

Of near-reliables the world has a surplus. The genuine article is so scarce that when you meet it you feel as if you'd stumped your toe on a fifty-pound nugget of Klondike candy.

The name of the man who tells you he can be counted on is LEGION and the name of the man who CAN be counted on is about the smallest minority

taking off his coat, or anything of the sort.

He's on the job at 1:00, and I know I'll find him ready for business at 1:01, just as I know the gas bill will exceed my largest expectations.

Which is a true index to Bill's busyology. He is reliable.

You hear folks sighing because they are not gifted like So-and-So. Life with many persons is a constant succession of "ifs." IF, however, there was more reliability there would be more success, and that would breed more happiness and that would land us where we want to be.

So here's to my friend, Bill Toothberger, and may his tribe increase.—*The North American.*

Building Your Own Motor Boat

HOW TO BUILD ROUND BOTTOM SKIFFS FOR SMALL MOTOR BOATS OR ROW BOATS—INTERESTING WORK FOR THOSE HANDY WITH TOOLS—MONEY MAKING OPPORTUNITIES FOR CARPENTERS

By George E. Walsh

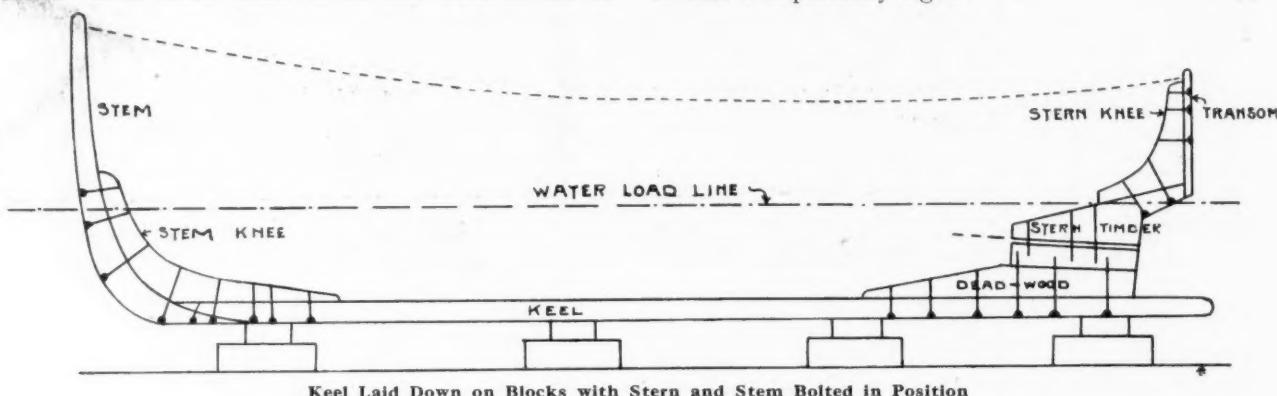
BOAT building may not come distinctly under the province of the carpenter, but there is no reason why he should not understand the elementary principles of marine architecture to the extent of being able to construct row-boats, skiffs and even small motor-boats. There are thousands of carpenters and amateur boatbuilders scattered throughout the country who are making their own boats either from copies of designs or from plans of their own, and in most instances they are having considerable success. The carpenter's training and education fit him for ready adaptation to boatbuilding, and where necessity demands it this work is a matter of very little extra effort.

The flat-bottom boat is comparatively easy to design and make, and a carpenter who turns these out from his shop at \$10 each makes a good thing of it. But the greatest profit is found in making round-bottom skiffs, small motorboats and houseboats. Thousands of amateurs are making these, and the carpenter who lives near water is slow if he does not undertake to build boats for himself and for prospective clients. Nearly every kind of a craft today carries a small gasoline motor, from the skiffs and canoes up to the big motorboats. Therefore, in trying a hand at boatbuilding the fact should be kept in mind that it is almost as easy to construct a craft that will accommodate a small motor as it is to design one for rowing alone. It is much easier to do this work at the be-

The working parts of the 23-foot boat will be seen in the drawings. This boat is intended for a gasoline line motor of three to seven horsepower, but it can be made smaller for a rowboat if needed, or for a small 17-foot motorboat. In order to build a boat of this size, it will be necessary to get the dimensions right.

Keel and Main Frame Work—The first thing is to get and lay down the keel. This should be one piece of oak three inches thick and four inches wide and 23 feet long. The keel is the most expensive and most important single item in the boat. If possible it should be in one piece and smoothed down to a good finish.

The keel should be laid on blocks, built up as shown in the illustration, so that the boat will stand a foot or more from the ground or floor of the shop. The next process is to cut out the stem, which should be five feet long, and cut so as to fit on the keel as shown. If it is impossible to get a stem of this shape in one stick, it may be made of two pieces. The stem knee comes next. The process of bolting these together, as illustrated, is simple. The stem must be plumb and perfectly rigid. To accomplish this it must be held in position by braces. If the bracing of the stem and stern can be made from overhead beams as well as from the sides, there is less likelihood of mishaps. The keel must also be braced so that it is perfectly rigid.



ginning than to alter old boats so they can be equipped with an engine.

The question of model and design is a matter for individual preference. The main thing to consider is the method of construction. As a simple matter of illustration we can select a 23-foot boat as a model, and then cut down or build up from it as necessity dictates. A man wants to see a graceful boat in the water, and to secure this the distribution of the weight must be such that there will be no undue settling of the bow or stern.

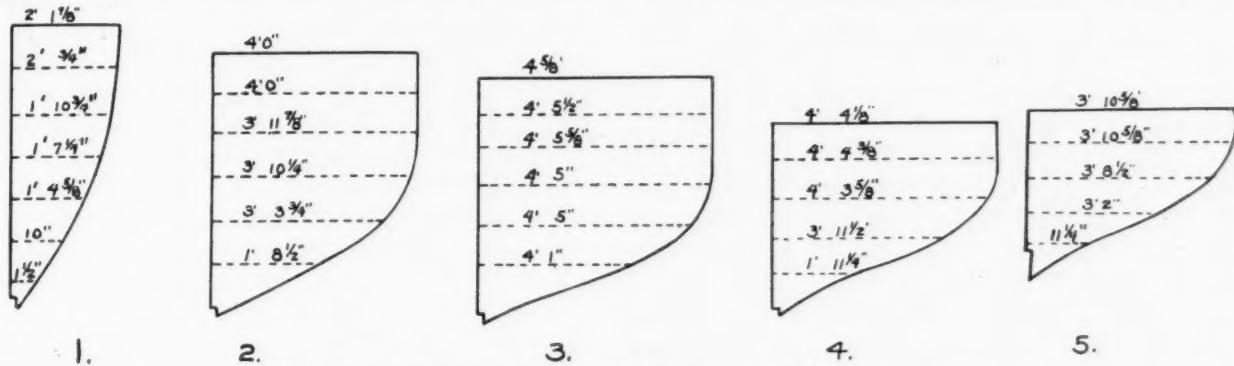
When the stem is bolted to the keel and stem knee, the stern should be taken up. What boatbuilders call the deadwood is first cut and laid. In this boat it should be of oak, and it may be composed of two blocks as shown, or of a single stick. The advantage of more than one block is that the shaft hole can be made easier. It is easier to secure the lumber by making the deadwood in several pieces and then securely bolt them together. Then comes the stern timber and the stern knee, both of which may follow different lines as one may choose. The exact shape

of the stern is not arbitrary, and many change this to suit any particular model they may have in mind.

The bolting of the stem, knee, deadwood, shaft log and stern knee together is of the utmost importance, and upon the success of this work will depend largely the security and strength of the whole boat. Carriage bolts are sometimes used for as much of this work as possible, but galvanized iron rods are best. Most marine hardware stores carry a full line of these in

them out of position. In order to make this work more secure, it is a good plan to run a plank or long stick down the center, holding all the molds together in one rigid framework. This plank should follow exactly the lines of the keel, and then it is possible to tell whether there is any change in the position of the molds during the planking.

Shaping and Applying the Frames—The easiest way to frame your boat now is to bend light yellow



Molds for Boat from Stem to Stern, Showing Method of Laying Them Off

stock, ranging from a quarter to a full inch in thickness. For a boat of this size the bolt rods should be about three-eighths. When the holes are bored, the exact length should be measured, and the bolts made so that the heads on the outside will countersink three-quarters of an inch or more. The countersink hole is then filled in with a wooden plug driven in tight and cut off smooth.

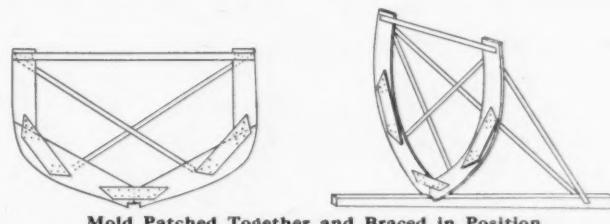
The transom is bolted to the stern knee as shown. The transom can be made of a single board or of two or more fastened together, as shown. The transom should be one and a half inches thick at least, and made of oak.

Boat Molds—With the keel laid, and the stem and stern bolted in position, and then rigidly braced so they cannot move from line, the work comes of designing and molding forms for the sides. This is a part of the work that will require the utmost carefulness, for the shape of the boat must follow the lines of the molds rigidly. At least five molds are required to secure a good shape, and some boat-builders make an individual mold for each frame. If five accurate molds are made from stem to stern and set up in position, the planking will take proper shape, and there will be no trouble. One may outline on paper the shape he desires for his boat, and then lay off the size of the different molds with a compass.

The molds must follow in shape the drawings obtained, and then set up as indicated, so that they are plumb with the keel. When placed in position, they must be securely braced so they will not twist out of line. When the molds are up, a line should be drawn around them to see if they are correct. The molds must not only be securely braced, but they must be rigidly built, for the strain of the hot frames must come upon these molds, and it is easy to force

pine ribbands around the molds, running from stem to stern. The ribbands should be solid and of two-inch pine. Bend about seven of these ribbands around the molds on either side, and you will have a pretty good model of your boat. They should be screwed or nailed firmly to the molds, although they constitute false or temporary work and must be removed later. But upon their strength and rigidity the whole success of the work will depend. If ribbands of this length cannot be easily obtained, shorter pieces can be spliced together and then bent to the shape of the molds.

You will require strong frames for a boat of this size, and these must be also of oak. Getting these frames just right is important. Green rather than dry oak is best for the frames, and you want straight and not quarter-sawed oak. The pieces should also



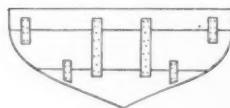
Mold Patched Together and Braced in Position

be free of knots, or they will break just where you cannot afford it.

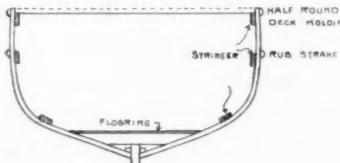
Bending frames to fit is one of the nice points of boatbuilding. Some builders manage to do this in a crude way, and then cut down and bevel them off to suit. The six or seven ribbands running around the side of the boat will make the work simpler. You can take a piece of very stiff cardboard and cut it to follow the lines formed by the ribbands, and then use this as a pattern. The frames are bent to shape with clamps or any other implements found handy

when the wood has been steamed or heated in a hot box. Any carpenter who has had experience in steaming and bending oak will find the construction of the frames comparatively simple. The frames are bent rather more than the lines of the boat call for. They will be drawn out even then when the planking is applied. Shaping the ribbands to the lines of the molds is simplified by a greater number of molds. The heels of the frames should be notched so they will butt against each other at the center of the keel. It is better to begin with the frames in the middle and work in either direction. If a pattern of thin wood is then used this can be employed for all the frames by cutting off a little as you proceed. The heel of the frame should be nailed securely to the keel by three-inch galvanized iron nails or fastened with iron bolts. Like everything else, each frame must be perfectly plumb and rigidly held in position. The frames should be placed a foot apart from stem to stern, and they should be one inch wide and one and a half inch thick. The last frame should be screwed fast to the transom, so that it will hold rigidly and not permit the plankings to spring out at a point where the bending strain is the greatest.

Inside Flooring—The next point is to put down the inside flooring, which will strengthen the frames and hold them rigidly in position when the molds are knocked out. One and a half inch flooring should be used, made of oak, and bolted securely to the frames. On top of this a lighter flooring may then be placed. Underneath the flooring there will be a space for water to run the whole length of the boat. Before the flooring is put on the frames below should



Transom, made of three pieces, cleated



Sectional View Amidships

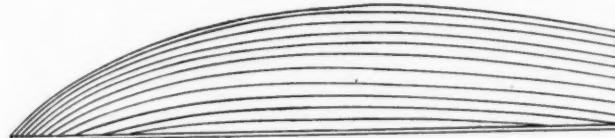
be painted, and the bottom of the boat may be flushed with smooth cement to prevent decay where water stands.

Stringer Braces—When the floors are riveted to the frames, the molds may be removed, great care being taken to do this work without displacing the frames, which are now only held in position by the outside ribbands and the flooring boards. As soon as the molds are knocked out the yellow pine stringers are put in place. There are three of these on either side. One runs along the upper edge of the frames, another a foot and a half below the deck level, and the other, known as the bilge stringer, half way from the deck to the keel. These stringers stiffen the frames, and they should be of yellow pine four inches wide and two inches thick. Where the curve is sharp they may be tapered somewhat to make the bending easier. Unless tapered in places they will break in trying to get

them around the sharp curves. The stringers should be copper riveted to the frames, so that they are perfectly stiff. In order to bend the stringers properly, clamps must be used at nearly every frame.

Outside Planking—The boat is then ready for planking. The planks should be three-quarter-inch cedar or cypress. Where they bend sharply they must be heated or steamed. Otherwise they will never get around the sharp ends. The planks should be copper riveted, or at least be put on with galvanized nails. The cutting of the planks to fit the outside of the boat is a matter that calls for good carpentry work, for the fitting must be perfect, and as few crevices permitted as possible. All such places must be filled with oakum or other calking material. When finished and smoothed off, three coats of copper paint and one of finishing paint should be applied outside.

The inside finish of the boat is merely a question of taste. One may make a deck of natural finish wood



Bottom of Boat Showing Planking

and lockers to match or paint the whole surface. The engine bed is made of blocks of oak fitted so that the engine will have the right foundation to prevent vibration. The engine bed timbers should be carried over to several frames so that the vibration will be distributed about the hull of the boat.

The Manufacturers Will Help You

After building one boat, a carpenter will find out where he can improve upon his work. For that reason it is better to begin with a simple rowboat and work up to a larger and heavier craft. There is nothing mysterious in the art of boatbuilding. There are a few difficulties which one may find annoying at first, such as bending the frames and getting the plankings around the sharp curves, but these disappear with practice.

The field for boatbuilding is almost unlimited. On many of our bodies of water there are no marine architects, and yet the demand for boats is great. The carpenter who becomes expert in this line soon has all the work he can do. Some start in by purchasing the patterns issued by the knock-down boat companies, and then after a few trials they make their own patterns. In this way many a carpenter has progressed into the mysteries of expert boat construction.



They Keep the Pot Boiling

Tourist—Why do you call this a volcano? I don't believe it has had an eruption for a thousand years!

Guide—Well, the hotel managers in this region club together and keep a fire going in it every year, during the season.—*Meggendorfer Blaetter*.

Garage Building

TIMELY SUGGESTIONS FOR THE BUILDING AND EQUIPPING OF PRIVATE GARAGES—CONVENiences AND SAFEGUARDS THAT SHOULD BE PROVIDED

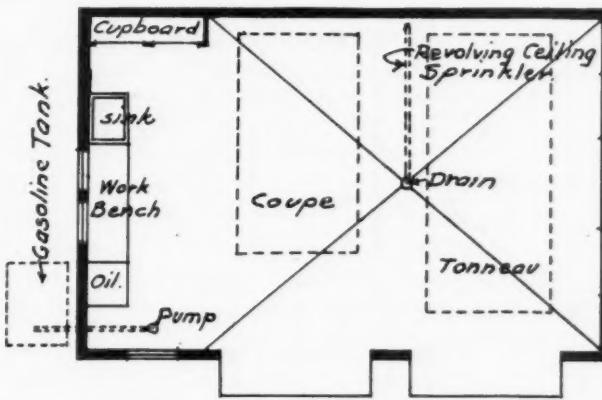
THE first question to be considered in the construction of a garage is—is it practical? No matter how beautiful it may look—no matter how it may be finished or how many pretty windows and corners it may have, if the car to be housed within scrapes the top in passing in or out or is jammed in the sides, the garage is not much good. Any garage, big or little, is built to protect. If it fulfills its mission, it must protect from the weather, from thieves and robbers, and as much as possible, from fire.

In the last few years there have been some wonderful strides taken in the improvement of the garage. One of the newest features introduced, which is fast becoming very popular, is to have the concrete floor sloping. The floor is so graded that a slight push will dislodge the car and send it out the door. In case of a fire this would prove very valuable, for fires generally break out so quickly that there is no time to crank up and the cars must be gotten out without loss of time. The cars are kept from sliding while at rest, either by setting the breaks or by inserting a small wooden wedge under one of the wheels.

The garage shown herewith is a popular model and is unique in its design. It has accommodations for

two machines, and is built of stucco. As you will notice from the floor plan a tool room is located at the left, with a work bench running the entire length of the building. This garage can be constructed at a very reasonable price and is very serviceable.

The lack of space in the modern garage generally

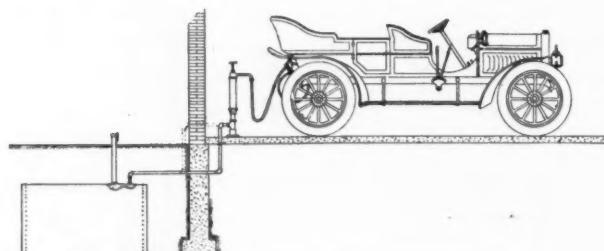


requires an arrangement that will permit all available space to be utilized and not wasted. It is well for anyone contemplating building, to be sure that



Stucco Garage with Accommodations for Two Machines; Cost, About \$700

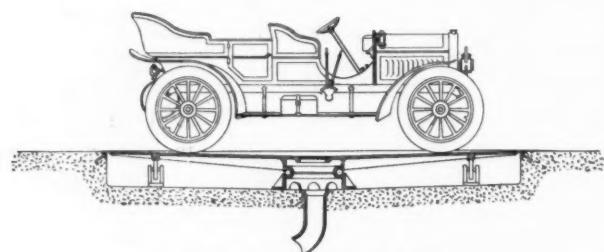
he has enough space for future enlargement. Very frequently more space is desired, and if a small garage was originally built, it cannot be gotten without considerable expense.



Safety Underground Gasoline Storage with Pump

The accompanying illustration shows a very valuable method of storing gasoline. By its use a large quantity can be kept on hand with safety. The tank is buried outside of the building and the gasoline is pumped into the automobile as needed.

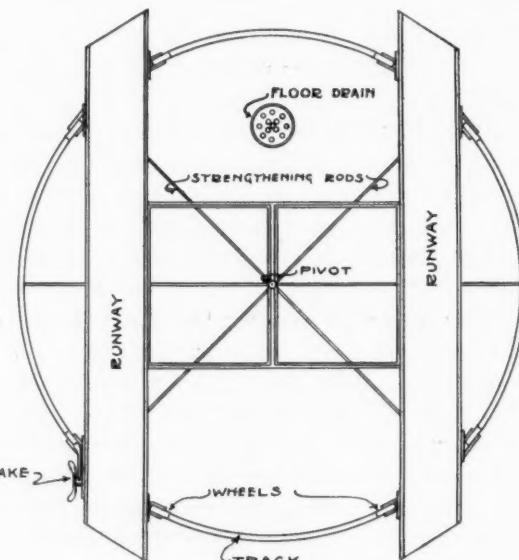
Another very important labor saving device in the modern garage is the turn-table. Where floor space



Automobile Turntable in Pit.

is limited and where there is no chance to back or turn around, this device is practically a necessity. It is also very useful when the machine is being washed or repaired, as any part desired can be turned toward the light. The illustration herewith shows a common form of turntable. As will be noticed, a circular platform,

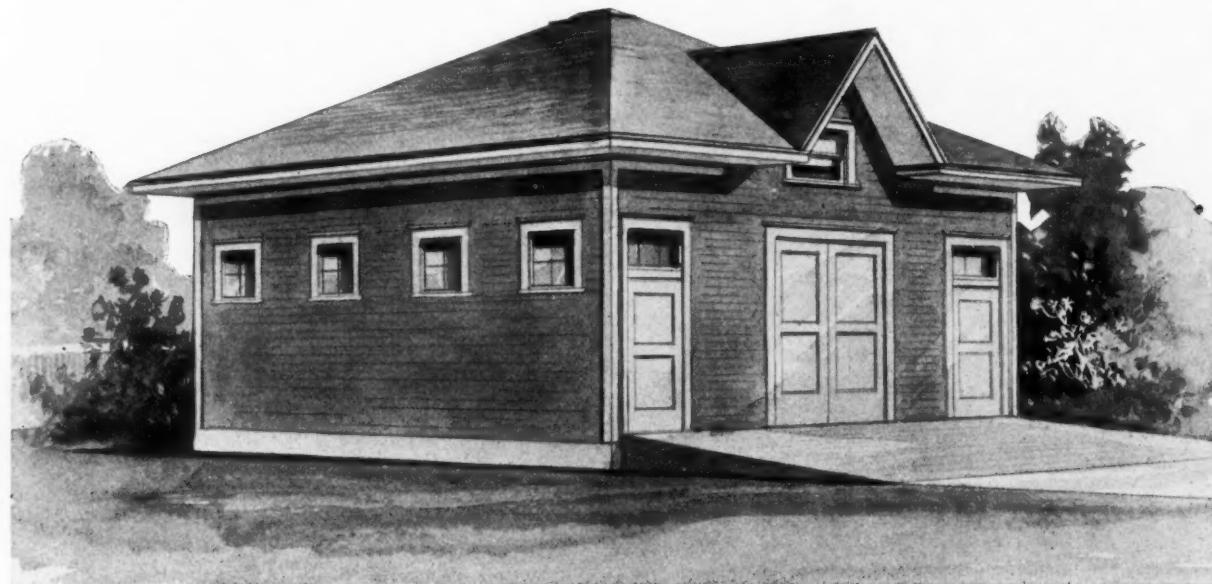
dished toward the center and braced on the under side by heavy ribs, is supported at the center by a heavy ball-bearing, and near the edge by a circular ridge on the lower side of the platform. This ridge rests on several small wheels placed with their axles in standards resting on the bottom of the pit. These wheels prevent the platform from tipping when the



Plan of Pitless Automobile Turntable.

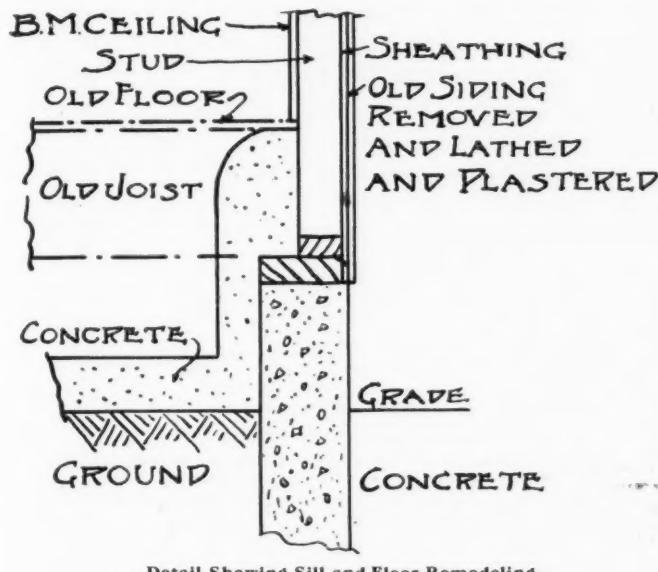
cars run onto the turntable and also act as roller bearings when the platform is turning.

Another form of automobile turntable is shown, this one being without a pit. This is placed directly on the floor and does not require any bolts or screws. It is compact and complete in itself and will not tilt. This table can be installed in a very short time at a very little expense, as the only thing needed when installed in a finished garage is the concrete approaches which can be made at a small cost. If the space in a garage



Small Barn to be Converted into a Garage.

is so limited that it is necessary to turn the steering gear three or four times every time the car is backed out, the price of one of these tables will be saved in the wear and tear on the tires and steering gear, without mentioning the possible damage done.

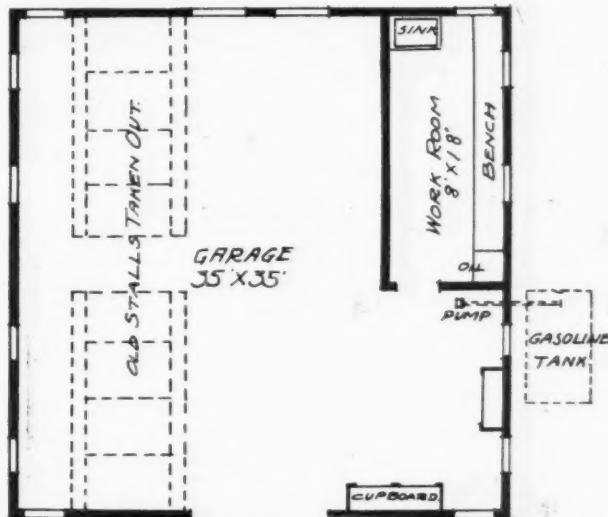


Detail Showing Sill and Floor Remodeling.

The swivel washing arrangement is another very useful apparatus which is used in the modern garage. This swivel hangs from the ceiling and the hose is fastened to it so that you can walk around the car and reach all points with ease.

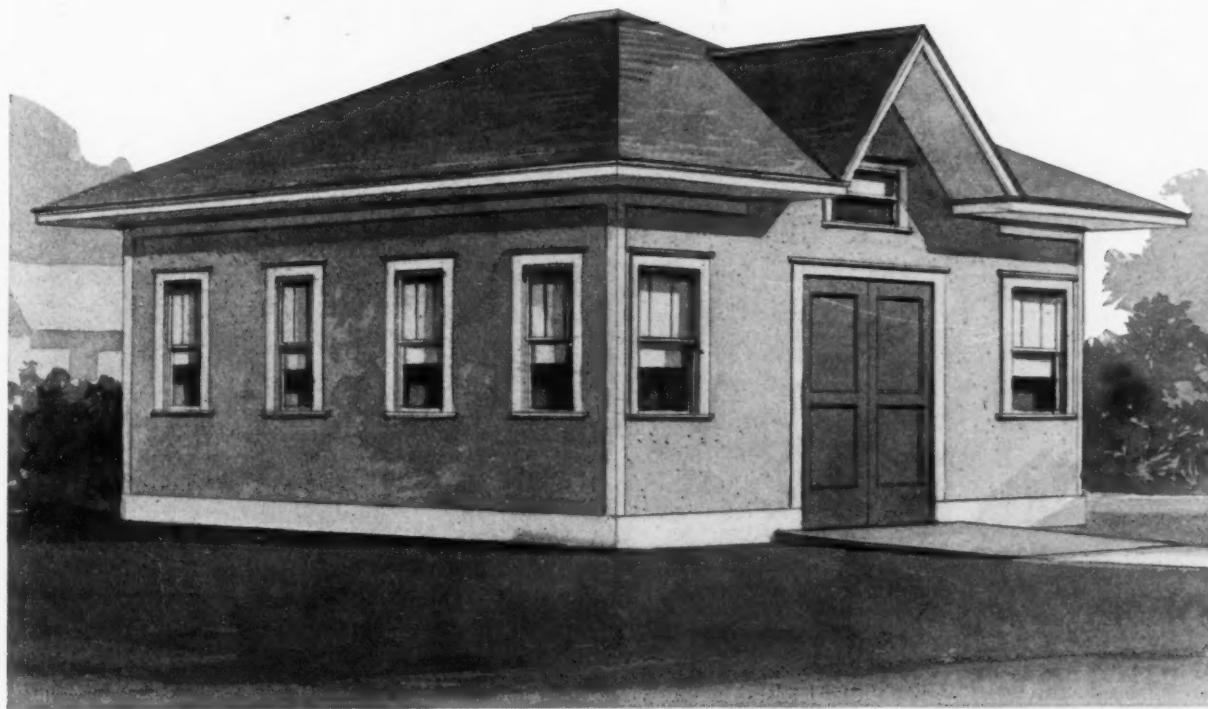
It is not a very difficult matter to convert a small stable or barn into a serviceable garage. In the accompanying illustrations a remodeling job of this kind

is shown. The most important change is the tearing out of the old plank floor and putting in its place a concrete floor at the grade level. Perhaps the most noticeable changes in the external appearance are in the size of the windows, and the doing away with the two small side doors, and the cutting down of the slope of the incline leading to the level of the stable floor. At a closer viewpoint, it will be noticed that the original siding on the exterior has been removed and a lath and plaster wall, ceiled on the inner side, substituted in its place.



Plan of Remodeled Structure.

Well equipped private garages are fast becoming very popular, as automobile owners are awakening to the fact that unless garages have these improvements and are fireproof, it is not economy to build them.



Barn After Remodeling into Modern Garage

"Out Door" Living Rooms

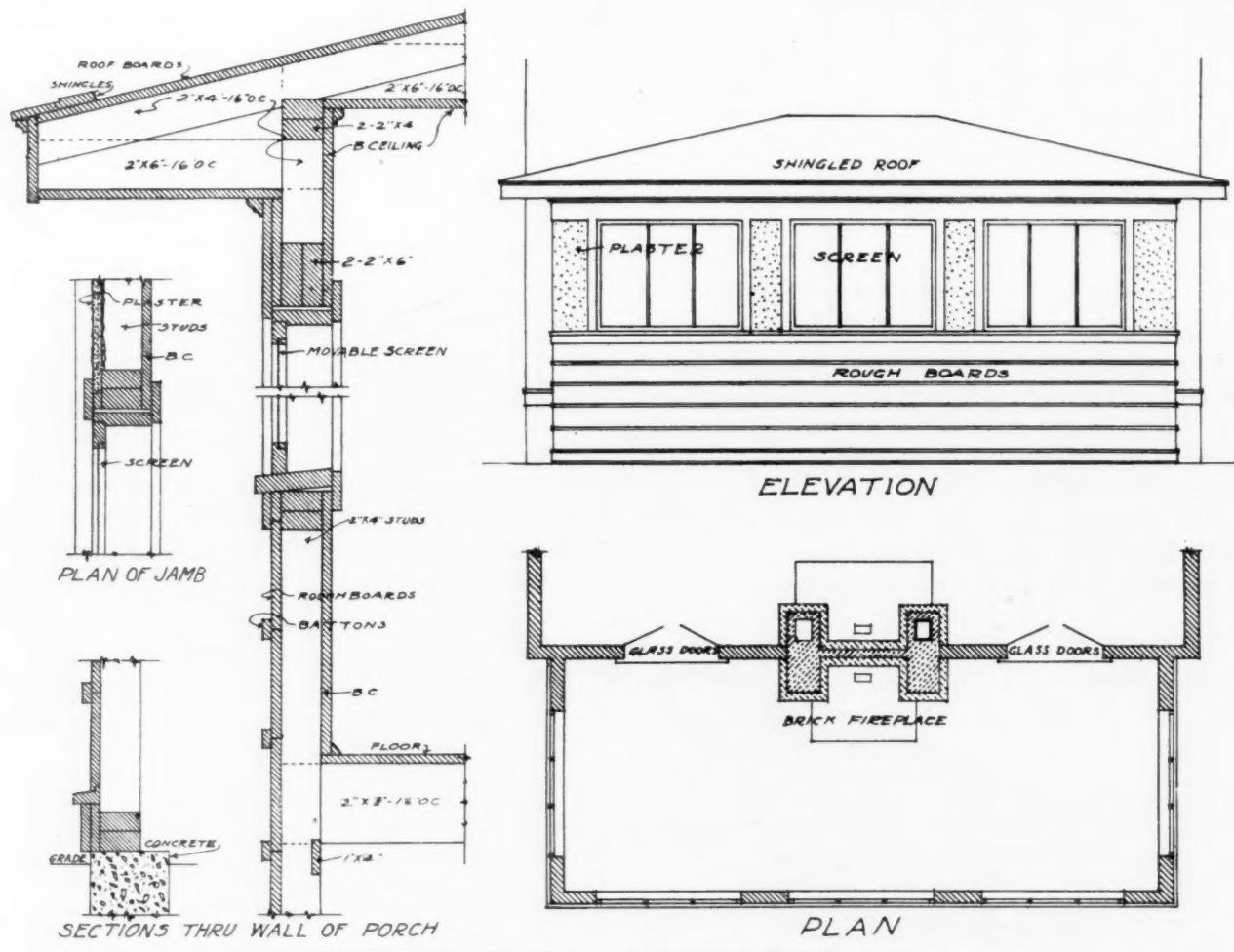
IDEAS FOR THE CONSTRUCTION, FINISH AND USE OF THE SEVERAL VARIETIES OF POPULAR OPEN-AIR ROOMS AND PORCHES

ALMOST everyone these days wants a screened porch, or outdoor living room, as a part of his dwelling. New houses are pretty sure to include this features, and old houses are being remodeled to make place for it.

Outdoor living rooms are of several types, depending a good deal on the nature of the residence, its location and the kind of climate prevailing. The three most common types are illustrated herewith: The all-window room in a one-story addition, substantially

serves the double purpose of screened porch in the summer time and conservatory or solarium in the winter. A room of this kind is a great addition to any house. It affords a much higher degree of both privacy and security than the ordinary screened porch, without sacrificing in any degree that wished for quality of breezy coolness.

The working drawings show details of approved construction for such an outdoor living room. This particular design uses a combination of rough boards



A Model Outdoor Living Room—Design and Details of Construction

built and nicely finished, the same as any other part of the house, and provided with means for heating in cold or chilly weather; the broad porch roughly screened in and with shades or curtains to keep out the sun; and the open terrace with an awning serving as roof.

The first of these is the type that is coming into great popularity for town and city residences that are to be occupied all the year round. Movable screens are fitted into the windows for the warm weather season and glazed sash are substituted for these during the other seasons of the year. Thus, the same room

with battens for the lower part and cement plaster for the small panels between the window groups. Above is a hip roof, shingled.

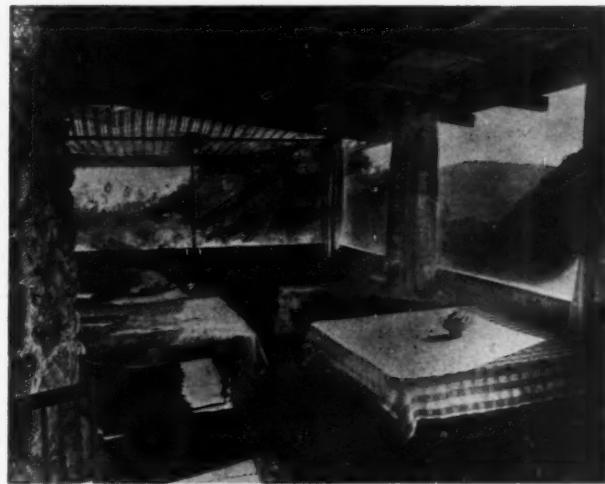
This room is finished with beaded ceiling, both above and for the side walls. For inexpensive work this does very well. The floor should be of cypress, pine or maple,—rain is pretty apt to come in at times. For expensive work the flooring is often of tile, cement or terrazzo.

In order that the part of the house adjacent to such an outdoor room should not be darkened by it, two pairs of double glass doors are provided. These should

be glazed the entire length; and, to make the best appearance, are divided up into square panes. These doors open inward. In the best work extra doors are also provided opening outward, so that when both sets of doors are closed a dead air space, the thickness of the wall, is formed. This keeps out the cold in severe weather. A room with so much exposed glass is sure to be a pretty chilly place in extreme weather, even when a means for heating is provided. An open fire in the grate adds to the comfort of a room of this kind on chilly days, and a good steam radiator is appreciated in the winter time when the room is being used as a sun parlor.

For country homes and especially for summer cottages, large porches, screened in, are both enjoyable and extremely useful. They are used for sitting rooms and dining-rooms and sometimes too for sleeping rooms. The photograph herewith is suggestive of the utility and comfort of such a porch.

Open terraces, with brick or tile floors, are a part of many expensive dwellings. In the warmer parts of the country, especially, these are popular. The illustration is of one in Los Angeles, Calif. The striped can-

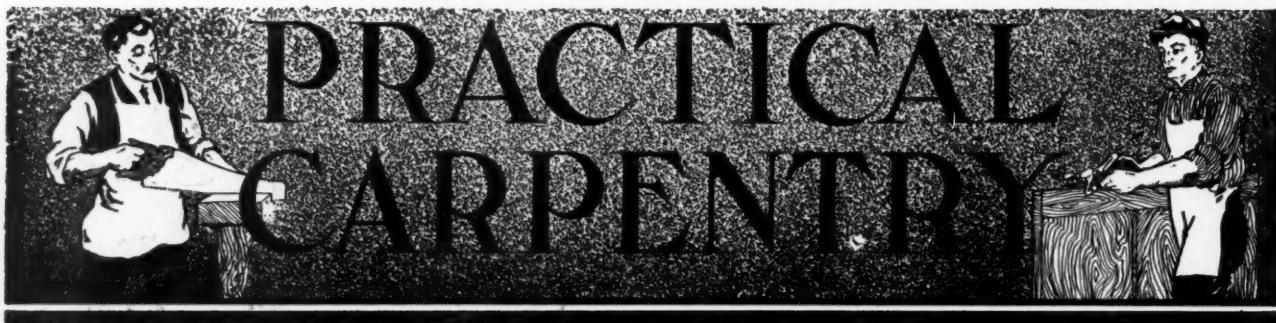


Broad Screened Porch—An Important Part of the Summer Camp

opy serves as the roof and can be lowered clear down in front to give additional protection. Such a porch is delightfully cool. It can be kept clean and fresh by being flushed out with the hose every day; and there is nothing about it to be harmed by the weather.



An Open Terrace, Awning Shaded, as They Use Them in Warm Climates. This One is Part of the Residence of A. T. Johnson, Los Angeles



Stair Building Under Difficulties

WHAT TO DO WHEN PROPER SPACE HAS NOT BEEN LEFT FOR THE STAIRS—PRINCIPLES AND METHODS
CLEARLY EXPLAINED

By Morris Williams

IN order to further help the young carpenter who aspires to be a competent stairbuilder, I present in this article the accompanying illustrations of a stairway, somewhat similar to the example presented in the February issue.

The main difference between the two will be found in that the conditions for building the one in the February issue were altogether favorable; while for building the one here presented, the conditions entail difficulties that often turn up in the routine of the daily practice of the stairbuilder, and are of such importance to the learner that to neglect their consideration by a writer on stairbuilding would be a flagrant breach of duty.

Other differences as may be observed by comparison will be found in the additional items of round steps and winders, presented in this month's example; and incidentally other items also, which, explained will be of great value to the young learner, who is ambitious to reach the goal of proficiency in stair building.

The difficulties heretofore mentioned will be found in the perusal of the plans, Figs. 14 and 15.

Fig. 14 illustrates the plan of the reception room on the first floor and Fig. 15 that of the landing hallway and well-hole on the second floor.

It will be observed that a door opens to the dining-room from the reception room, limiting the allowed run for the first flight and first platform to 7 feet 11 inches; also that the header joist of the well-hole in Fig. 14 is so fixed as to limit the run of the top flight and top platform to 6 feet 4 inches. The run space allowed for the middle flight and the two platforms, as shown in Fig. 14, is 12 feet 8 1/4 inches.

The height between the first and second floors is found, upon the story rod, Fig. 16, to be 11 feet 8 1/8 inches.

The foregoing are the conditions of the staircase wherein the stair-builder is to build the stairway and as will be further shown, it is not what it should be to guarantee the best results. The fault it entails may have been caused either by an oversight, on the part of the architect in planning, or carelessness and sometimes incompetency on the part of the "boss" carpenter in framing the well-hole. Whatever the cause

may be, it encumbers the stair-builder with a very heavy load of hard thinking preliminary to the laying out of his detail work. He must first examine the conditions carefully—know the exact height and run at his disposal; and if he does not know his business as he should, he is very likely to get into trouble before he is through.

To help the young and inexperienced to do the best that can be done while facing such conditions, I here propose to show how competent stair-builders usually proceed in such emergencies.

The first thing to consider will be the number of steps that will be required to reach from floor to floor, not forgetting in this connection to look out for a step of such relative proportion between treads and risers as will guarantee the best stepping facilities.

A 7-inch riser for a step in a first-class residential building is acknowledged to be a standard riser and a proportional tread for such a riser according to either one of the rules mentioned in the February issue will be 9 3/8 inches.

This then is the step the stair-builder would use if the conditions of the staircase allow, and he will proceed to find out whether he can use it or not; and if not, what other step with the same relative proportions he may be able to make use of. He will therefore first try the 7-inch riser and see how many will the total height of 11 feet 8 1/8 inches require, as follows:

Eleven feet 8 1/8 inches reduced to inches will equal 140 1/8 inches; this divided by 7, the height of riser, will show the number of risers required to be 20. Now 20 risers will call for 19 treads; and as before stated, the tread for a 7-inch riser will have to be 9 3/8 inches wide to produce the best stepping result. Will the run at his disposal supply sufficient space for 19 treads of 9 3/8 inches width? The intersecting platforms count for two treads. He will therefore need run space for 17 treads only; and these are to be distributed between three intersecting flights as shown in Fig. 14. The first flight, as there shown, has a run of 7 feet 11 inches, including the platform which measures 4 feet. By taking out 4 feet from 7 feet 11 inches he will have left a run of 3 feet 11

inches or 47 inches for the treads. By dividing 47, (the run) by 9 $\frac{3}{8}$ (the width of tread), he will find the number of treads the space at his disposal for the first flight will contain—viz., 5 treads as shown in plan Fig. 14.

By the manipulation of the same arithmetical process, the number of treads between the two platforms

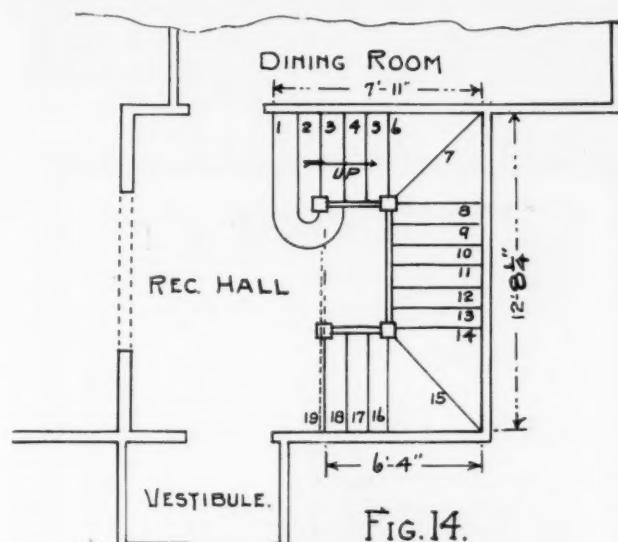
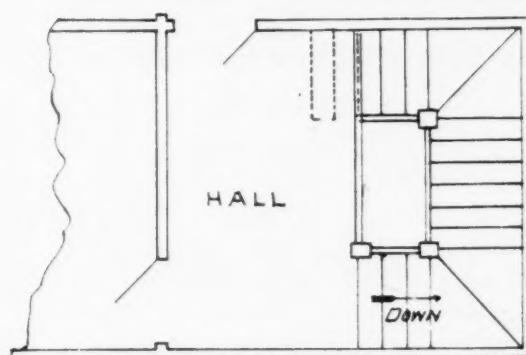


FIG. 14.

Plan of Stairs on First Floor

for the middle flight will be found to be six. The top flight, as shown in Fig. 14, has a run of 6 feet 4 inches, including the 4-foot platform. By deducting 4 feet from 6 feet 4 inches, there will be left the run space of 2 feet 4 inches, or 28 inches for the treads, just sufficient space for three treads, as shown in Fig. 14.

Now, he will find by adding up the combined treads of the three flights there found, that the sum will but number fourteen treads, and even with the platforms

FIG. 15.
Plan of Stairs on Second Floor

counted as treads, the sum total of treads will number but sixteen, while the necessary number required is nineteen.

Then, he will find that the very best step composed of 7-inch riser and 9 $\frac{3}{8}$ -inch tread cannot be used, owing to not having sufficient run accommodation. Under such conditions, the stair-builder will have to think a great deal, and think intelligently too, for

the stairway must be built and be the very best that can be built within a staircase of such unfavorable conditions.

Now, he will turn his attention to the platforms. He is aware that by cutting up the platforms into winders, he can easily gain enough run for the three treads he found himself short of. But will this be the best that can be done? To gain the three treads, he will have to make two winders out of one platform and three winders out of the other, thus exchanging two platforms for five winders, gaining by so doing the three threads required.

There are two overwhelming objections to such an arrangement. Owing to the variety it will cause in the steps, it will decrease the stepping facility of the stairway; and owing to the diversion it will produce in the goose-necks, it will mar the ornamental effect of the finished structure.

The competent stair-builder can see ahead and will

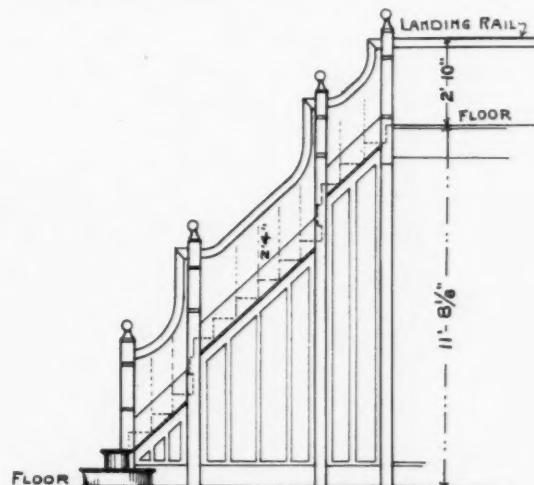


FIG. 16.

Elevation of the Three Flights Unfolded

avoid such a vital misarrangement in time, before it is too late to be rectified.

Now, after finding that he cannot produce the right kind of a stairway under the conditions thus far attempted, he will try again. This time, knowing that twenty risers of 7-inch depth will need nineteen treads and that the runs at his disposal allows for but sixteen, he will go ahead to find out what results may be obtained by fixing upon nineteen risers instead of twenty.

To find the exact depth of his new riser he will proceed as before, to divide the total height between floors—viz., 11 feet 8 $\frac{1}{8}$ inches or 140 $\frac{1}{8}$ inches by 19. He finds that the depth of riser this time will be 7 $\frac{3}{8}$ inches instead of 7 inches.

A tread must now be found that will be of a relative proportion to the new riser as to guarantee easy stepping. To find the width of tread, he will divide 66 by 7 $\frac{3}{8}$, the depth of the new riser, and find the width of his new tread to be 8 $\frac{14}{16}$ inches, which is

so near 9 inches as to enable him for convenience sake to consider it as such.

To a step made up of 9-inch tread and $7\frac{3}{8}$ -inch riser, there will be not the least objection, but will the limited run space at his disposal allow the use of it? The number of treads he will need this time is 18, counting the two platforms as treads. He will find the only way he can get the 18 treads will be by making 2 winders out of each platform. This then, is what he will decide to do; and will, before starting to lay out his work, draw a plan sketch of the stairway similar to the drawing represented in Fig. 14. This sketch need not be made to any scale, as it will not be used, except as a reminder of conditions while the stairway is in course of construction.

Another matter of importance that must be settled before going any further is the placement of the first newel post. Under ordinary conditions this newel would be placed in front of the first step, but owing to the fact, as in this case, that the first step is so close to the door leading to the dining room, as shown in Fig. 14, the newel if so placed would encroach upon the passage way from the reception to the dining room; and consequently should be placed as it is shown in Fig. 14, in front of the third step so as to be that much out of the way.

The ends of the first and second steps by this arrangement should be rounded, as shown.

Now, the stair-builder has the plan of the stairway completed and is satisfied that it could not be made any better considering the unfavorable conditions of the staircase. He may now proceed to lay out the details wholly confident of satisfactory results, both in respect to the stepping facility acquired by having the correct proportional step and the ornate appearance of the stairway when finished and in position.

The elevation of the three flights unfolded is represented in Fig. 16, showing clearly the appearance of the assembled members in their relation to one another.

The constructive details of this stairway, both steps and hand rail will be fully illustrated and explained next month.

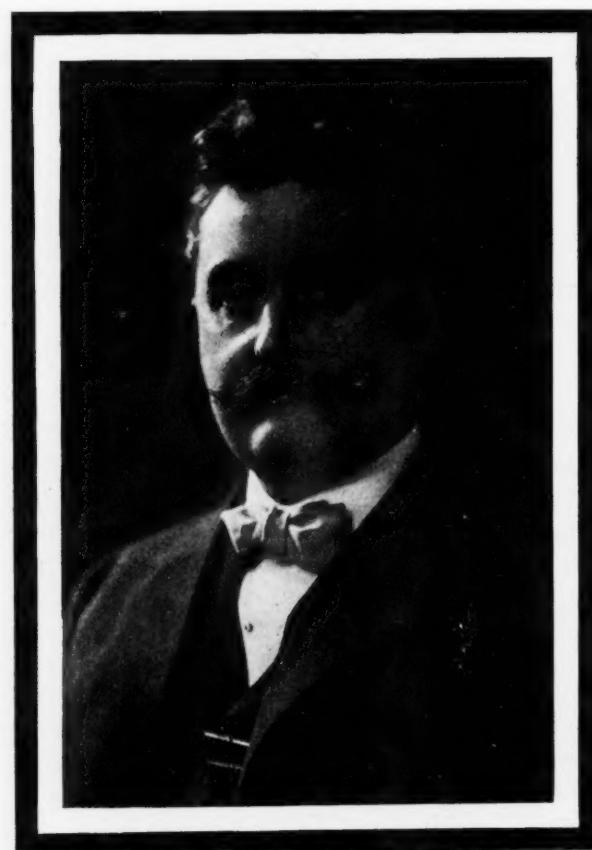


George H. Bishop Dies Suddenly

The many friends of George H. Bishop were shocked to learn of his sudden death on April 12th. He died at French Lick Springs, Ind., where he had gone to recuperate after an extensive western trip. He leaves a sister and a brother.

Mr. Bishop was head of the saw manufacturing business of George H. Bishop & Co., Lawrenceburg, Ind., and was one of the best known men in the hardware trade. His friends are legion. Mr. Bishop was a man who believed in work, not in words. While of a most kindly disposition, he was at all times an exceedingly aggressive man, building up for himself and

his product a large place in the business world. He was born Sept. 15, 1855, in southeastern Indiana. At an early age he left home and made his way to Cincinnati, Ohio. His first business experience was gained in a jewelry establishment of Duhme & Co., Cincinnati, wholesale jewelers. Late in the eighties he became connected with the National Saw Company, representing that company on the Pacific Coast, Canada and British Columbia. When the National Saw Company was later absorbed, Mr. Bishop decided to enter the saw manufacturing business for himself. In 1890



George H. Bishop

he purchased the factory building at Lawrenceburg, Ind., the present location of the Bishop Saw Works. He began business in a very modest way, but through sheer perseverance and close attention, he increased his business rapidly, until the Bishop Saw Works became known from the Atlantic to the Pacific.

Mr. Bishop's brother, Charles Bishop, Jr., has been associated with him in this work, being factory manager at the saw works. He now assumes charge of the sales department of the business.

In the death of George H. Bishop, the hardware trade has lost one of its best known and most respected members. Mr. Bishop was a whole-souled man, who made a host of friends and retained them through his genial disposition and kindly manner, which endeared him to all his acquaintances. The news of his death will be received with great regret by all who ever knew him.

Pergolas, Both Practical and Picturesque

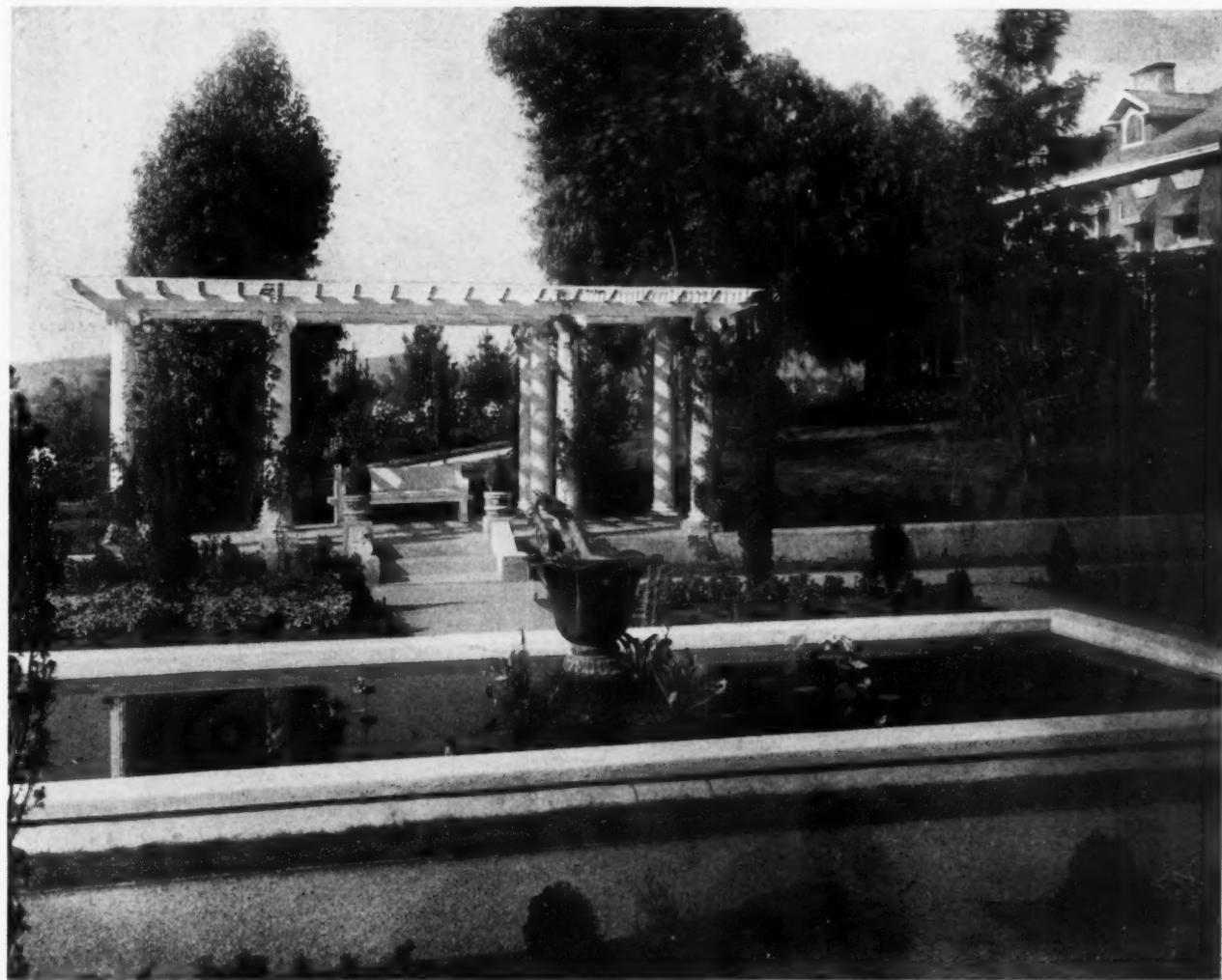
LANDSCAPE gardening effects in connection with building are becoming exceedingly popular, especially so in connection with home building. We Americans are now beginning to realize what, abroad, they have well understood and practiced for years,—that it is not so much the house itself as it is its surroundings which make an attractive place. Gardening schemes may be simple and inexpensive, or more elaborate as desired, and the space to be treated may be large in extent or small like the ordinary city yard; but in any case a pergola is the real essential thing that is needed today, if one is to be in style.

A pergola, properly designed, is the connecting link, architecturally, between the house and the garden; or it may serve as the terminal of a gardening plan. The pergola is the immediate concern of the architect and builder, for he must see to it that it is; first, of the proper design to harmonize with the style of the house; and, second, that it is properly constructed of suitable materials and set up as it should be. With this sub-



Pergola with Cement Plastered Pillars and Rustic Canopy

stantial and artistic foundation work, the garden lover can then plant and train his shrubs and vines to produce a really beautiful effect.



Classic Pergola as the Central Feature of a Beautiful Garden in Pasadena

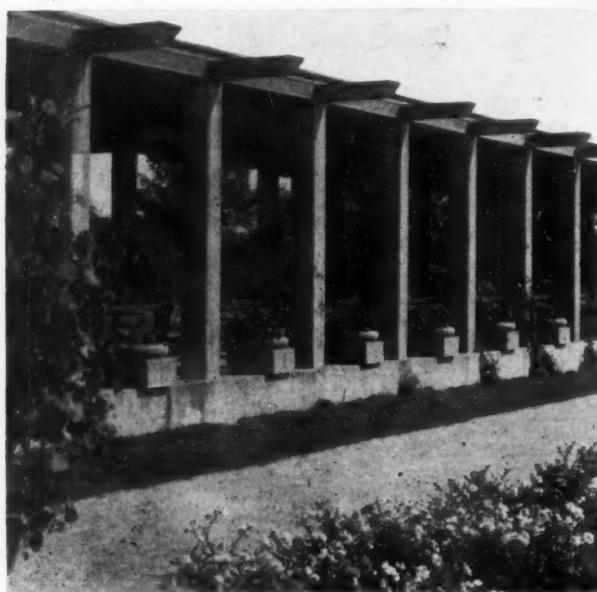
The variety of pergola designs and their adaptation to meet the needs of special cases are truly remarkable. The photographs reproduced herewith offer a few suggestions.

The pergola is just as valuable for improving the



Thanks to the Pergola the Tree was Spared.

appearance of the grounds of an old house as when used in connection with new buildings; in fact, one of the greatest uses for it is in redeeming the back yards of city and suburban homes. An authority on pergolas, commenting on this, has said that their greatest value relative to their surroundings is in such locations, where on first thought, one would not think it pos-



Pergola with Closed Roof for Extra Protection.

sible to use anything of the sort to improve appearances.

Suburban back gardens are usually all alike, and even though they may be neatly kept, the view of the neighbor's back steps and kitchen windows is not very

inspiring. The pergola is the salvation of a garden of this kind. Placed well towards the end of the lot, it terminates the view with attractive and artistic things. In this way a back garden is given individuality, and privacy is secured.

A word may be said as to the planting of vines and other floral adjuncts to the pergola. If this work is done with discrimination and care, there need be few months in the year when there is not some protecting foliage to lend grace to the pillars and roof. Certainly all summer long there should be no dirth. In this connection the grape vine comes to mind first and Virginia creeper and wistaria follow closely. There is variety enough, however, besides these coverings. Al-



Distinctive—Artistic—Inexpensive—The Crowning Feature of a Chicago Garden.

most as well known are scarlet creeper, trumpet vine, Japanese kudso, clematis, the honeysuckle and the woodbine.

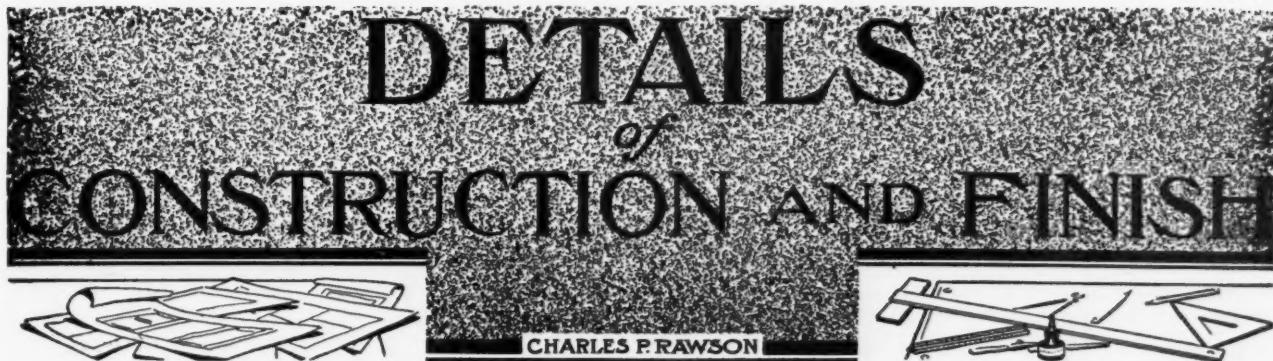


Timber to House a Billion People

The United States has enough standing timber to build frame houses for about a billion people, or two-thirds of the entire population of the world.

This fact is immediately deducible from figures given in the recent report of Herbert Knox Smith, commissioner of corporations, on the lumber industry of this country.

There are, in the forests of the United States, about 2,800 billions of board-feet of timber, a board-foot being equal to a slab 1 square foot in area and 1 inch thick. Sawed into lumber and placed in freight cars, it would load a train nearly a million miles long. Cut into blocks 4 inches thick and used as a paving material, it would provide wood paving for three million miles of roadway having a width of 50 feet, or it would make a road over a mile wide around the earth at the equator.



Shelving and Store Fixtures

CLEARLY DRAWN WORKING DETAILS, TO SCALE, OF UP-TO-DATE SHELVING AND FIXTURES FOR NEATLY STORING AND DISPLAYING DRYGOODS, GROCERIES, SHOES AND DRUGS

LAST month we presented details of a modern store front; following this, we show herewith the constructive details of up-to-date shelving and other interior store fixtures. They are for dry goods, groceries, shoes and drugs.

The proper display of goods is of very great importance in a modern retail store; and, to make a proper display, shelving must be made for the particular goods which are to be carried. The details given are merely suggested and slight changes could be made to accommodate other kinds of goods. All the drawings are made to the scale of three-quarters inch equals one foot.

Shelf cases or banks of shelves may or may not be backed; in the best work they should be. In case this is done, three-eighths-inch beaded ceiling stuff is the best material to use. For dry goods and shoes, shelves should be made stationary and the end should be housed into the upright support, and shelves, when of too great width for one board, should be of matched lumber to prevent unequal sagging. Dry goods shelves should have intermediate support made of small turned spindles. Shelves for groceries, drugs, etc., should be made movable in order that they can be made to accommodate the various sizes of packages, can, bottles, etc.

The system shown on the details for making movable shelves is very simple, and has proved to be first-class construction.

In order to accommodate more goods, it is customary, in making and arranging shoe shelving, to run them clear to the ceiling of the store. In order to reach the goods on the upper shelves a sliding ladder, running on a track, is provided. Two rows of drawers are made at the bottom for rubbers, overshoes, etc.

Five rows of drawers are provided at the bottom of drug shelving, and are provided with handles made to hold the label.

Attention is called to the extra top shelf shown in the grocery shelving for the display of canned goods, etc. In many stores it is necessary, in order to pro-

vide displays in this place, to put a row of empty boxes here, and this additional shelf does away with this necessity. Attention is also called to the display cases at the top of the dry goods shelving, in which goods in the bolt can be draped to advantage. The doors of these cases are held with automatic sash holders and slide down in front of the regular shelves.

The "Fire-Proof" Confusion

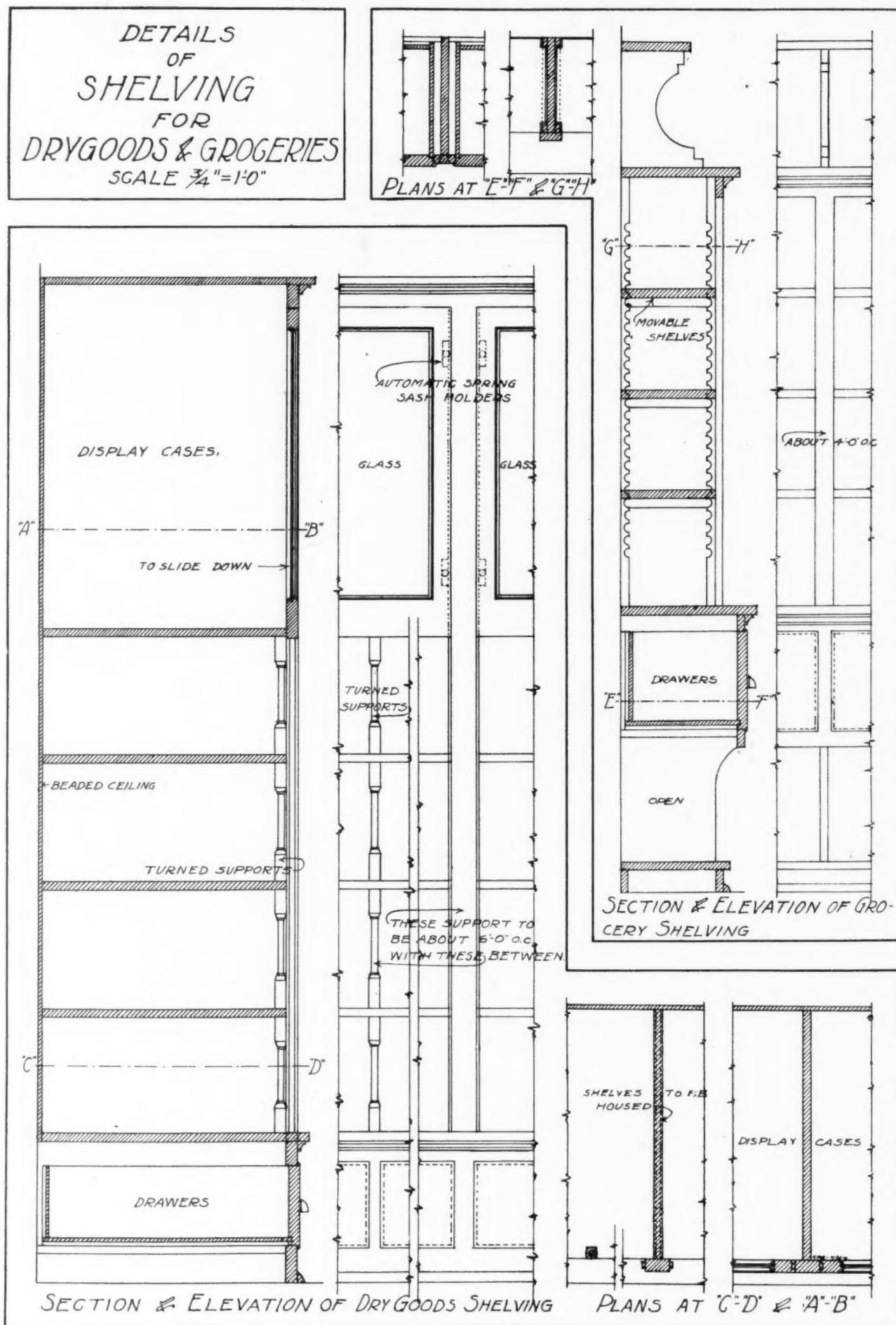
The Albany capitol fire adds one more to the considerable list of disastrous fires in "fireproof" buildings. After such events the public is puzzled to understand how so much damage can be done by fire if the building was actually fireproof, and so the opinion has grown, among many, that fireproof construction is a fraud, that there is no such thing, and that one building of stone is about as likely to be consumed as another.

In the case of the Albany capitol, there was firm belief that it was a fireproof building, in all respects. Report says that Albanians, when first told that there was a bad fire in the capitol, laughed. Yet, mark the damage that was done. The lesson, on that point, is, not to upset the protection offered by fireproof construction, by filling the building with inflammable fittings and contents left exposed.

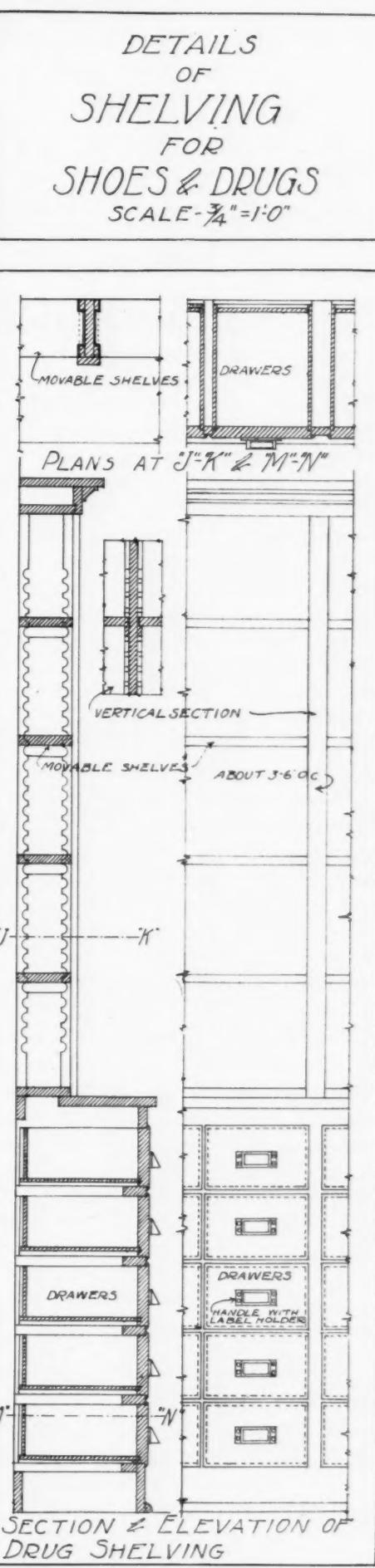
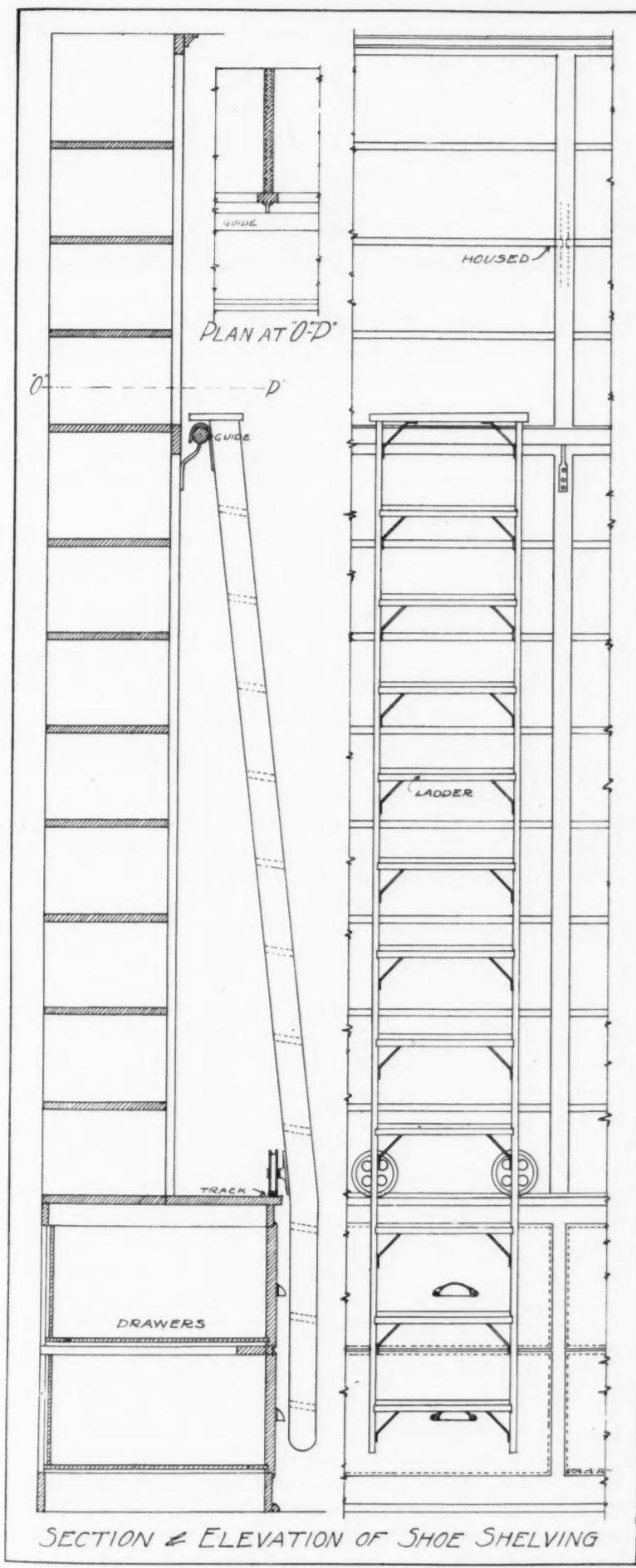
It was the contents of this capitol which burned. Books and pamphlets were piled high on the wooden shelves in the state library. They fed the flames quickly. Other inflammable fittings and papers added to the force of the flames. Even fireproof construction was menaced by the terrific heat. So, altogether, it will cost \$4,000,000 to renovate. It should be clear by this time that fireproof construction loses much of its effectiveness as a safeguard to property when a building so constructed is filled with inflammable material left exposed.

The fireproof capitol at Albany was like a stove, filled with fuel. The stove would not catch fire; the contents would. Too hot a fire will warp and crack any stove.

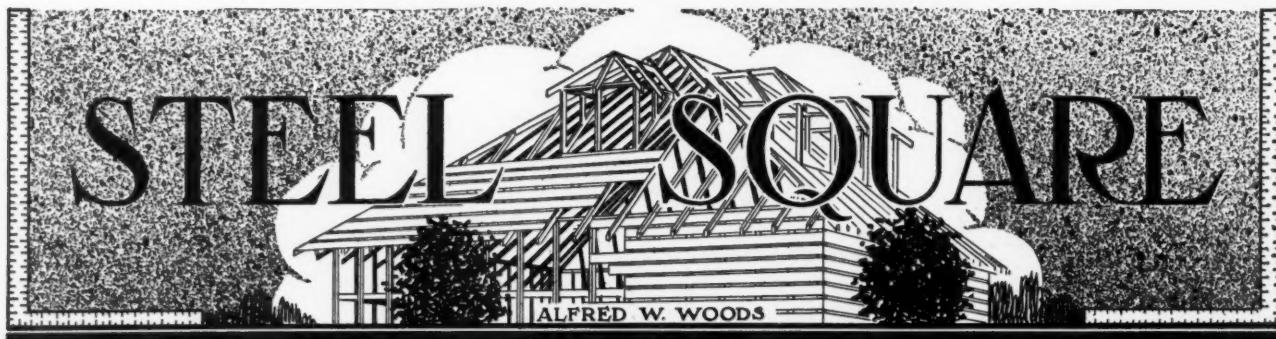
FULL PAGE PLATES SHOWING COMPLETE DETAILS ARE PRESENTED
ON THE TWO PAGES FOLLOWING



SHELVING AND STORE FIXTURES



SHELVING AND STORE FIXTURES



Practical Uses of the Steel Square

ROOF FRAMING WITH THE AID OF THE COMPASS AND A SYSTEM OF RIGHT ANGLE TRIANGLES—THE ENTIRE STEEL SQUARE SCIENCE IN A NUT SHELL

HERE are many ways of illustrating how to obtain the various cuts in roof framing with and without the use of the steel square, but the trouble with most all of them is that they are incomplete; that is, they do not explain or make clear why the parts taken give correct results. Too many carpenters are content with hand-me-down rules, which are in fact, not rules at all, simply fragments of rules that they have picked up along the way and are content to hold on to because they can use them here and there, but only under certain conditions. Therefore, they lack the connecting links and likewise their chain of thought is broken, they haven't a reserve to pull on.

In every community there are carpenters who can readily frame a hip and valley roof for the prevailing right angled cornered buildings and make every cut to perfect fit. But just come down or up a notch and ask them to frame a three or five cornered building and see what the result will be. The chances are that a link would be found missing and it would be necessary to brush up a little on geometry before the work could be started and then with a feeling of uncertainty at every stage of the game, and with final resort, probably, to the rule of thumb.

The trouble is in framing the common square-cornered building, they entertain an erroneous idea as to what constitute the real parts that should be taken to obtain desired results. It is a very easy matter to get off of the one fundamental rule that applies to all angled buildings alike, because the right-angled cornered buildings are built almost to the exclusion of all other angles and the foundation or triangle from which the calculations are bases, is a right-angled triangle with two of its sides of the same length (run and tangent). Too often carpenters do not understand the real part that each plays in the framing of the roof; being of equal length in the right angled corner buildings one answers for the other; consequently the part that each has in the framing of different kinds of roofs is not detected. The workmen go on framing the common square cornered buildings with hips and valleys; and think they are experts at it too, knowing all about how to frame with the steel square.

But there is one thing sure, which is this,—if they

really understand the true principles involved in the use of the steel square, they could just as readily frame the three or five sided building, as the square corner, or four-sided building. The parts that constitute the position of all rafters and their cuts are made up of right-angled triangles as base, altitude and hypotenuse which are to the rafter as run, rise and pitch. The run and rise are known factors to begin with and through knowing them the third factor (hypotenuse) is obtained. The steel square with its blade and tongue, furnishes two of these parts and the third is furnished by the manipulation of same in connection with the timbers to be cut.

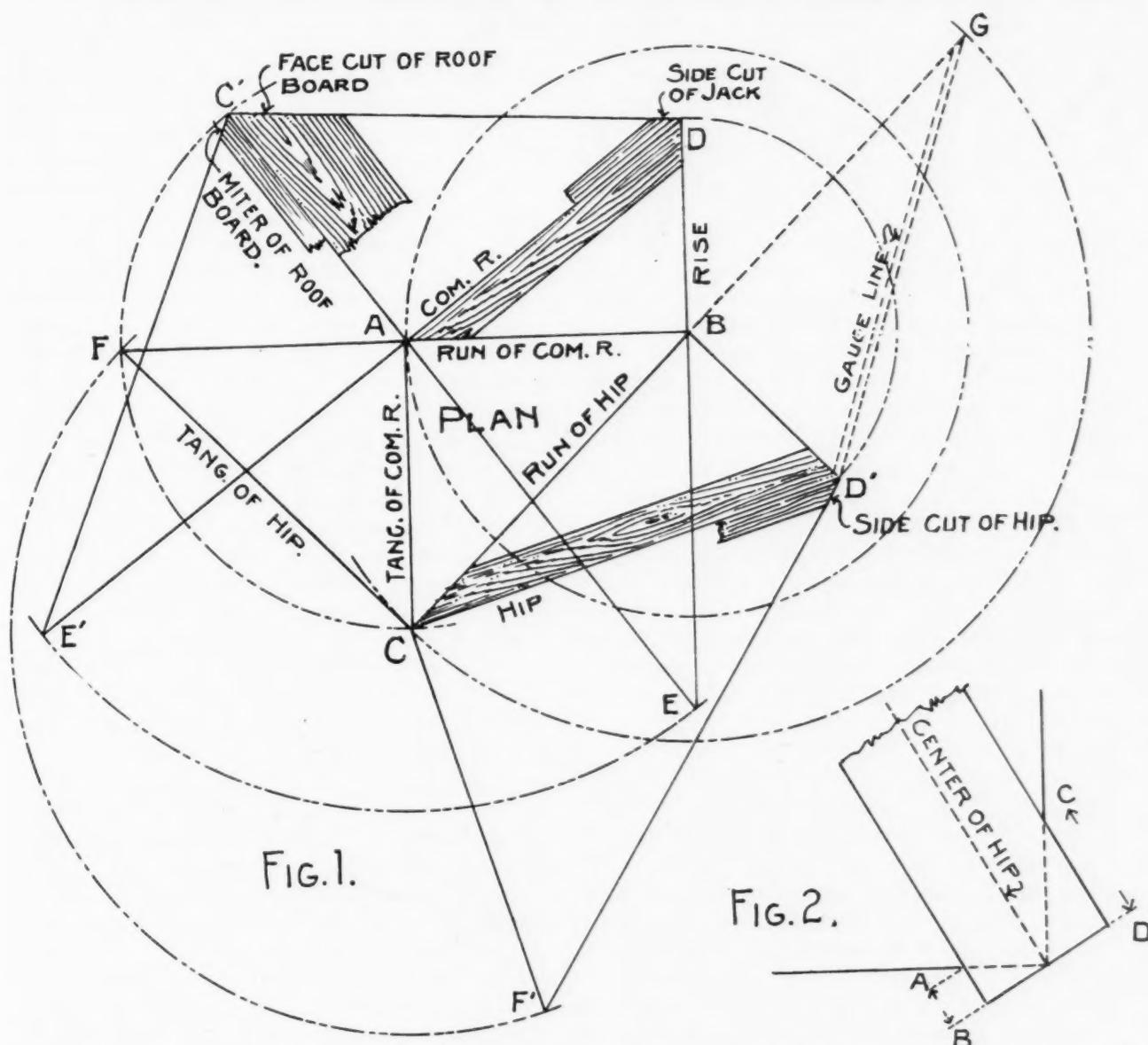
Referring to the accompanying diagram, all of the triangles that form the angles for the cuts are shown together with the relation of one part to another, as indicated by the dotted arcs from one to the other. Begin with the plan, which is bounded by A-B (run of common rafter), B-C (run of hip), and C-A (tangent). From B the rise is erected to D (which may be anything desired) and by connecting D-A the length of the common rafter is found together with its seat and plumb cuts, the run and rise giving them on the square. Now, transfer the tangent of the common rafter to a point at right angles from A-D as A-C' and connect C'-D. In this angle we have the side cut of the jack and the face cut across the roof board to fit in the valley or over the hip. This triangle is formed with the tangent of the common rafter for its base and its length (the common rafter) for its altitude. The side of the square on which the length is taken, will give the former cut and the side on which the tangent is taken will give the latter. The miter cut for the roof board partakes of an unseen part, which is bounded by A-B-E. It has for its base A-C (the tangent for the common rafter) and A-E (the co-pitch) for its altitude; and these transferred A-C' and E'-A will give the proper angle and the side of the square on which the former is taken, giving the cut. The cuts for the hip are handled in the same way as for the common rafter. The rise being the same, it is transferred to a position at right angles to B-C (its run) as at B-D' and C-D' its length is obtained as shown. Its run and rise give the seat and plumb cuts.

For the side cut of the hip, it is CD' and its tangent CF transferred to $C'F'$; connect $D'F'$ and the angle is found at D' as shown. The side of the square on which the length is taken will give the cut.

The backing of the hip is formed in the angle bounded by $BD'G$, which will be seen is of like proportions to that illustrating the hip. In other words, it is the hip's mate and is shown here for a clear field to illustrate the backing and may be found by setting off one-half the thickness of the hip on the seat cut, as shown at G . (It is necessarily exaggerated here, because the amount to remove is too small to represent by actual scale.) Therefore, if the hip

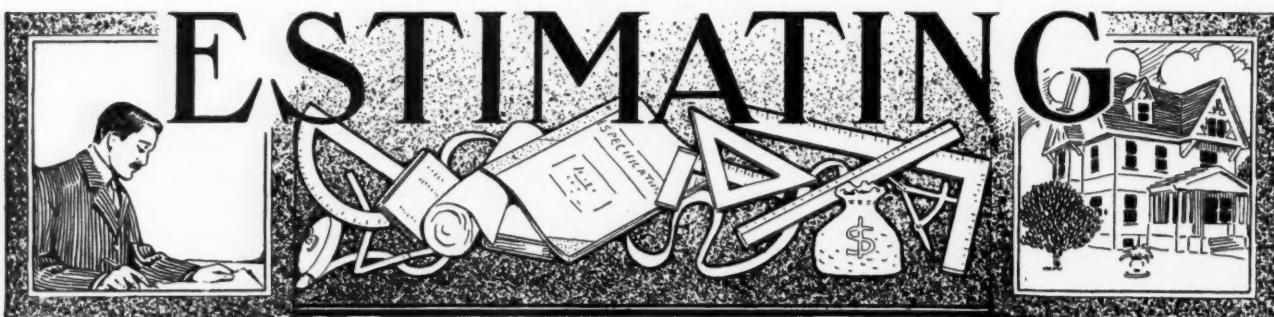
miter for the corner on which the hip rests. In irregular pitches, the gauge line will not rest at opposite points on each side of the rafter, as in the case of regular pitches. The little diagram, Fig. 2, shows a simple way of finding the amount to set off for any kind of a corner. Simply lay off the full thickness of the hip in the position it is to rest on the corner, and the distance AB on one side and CD on the other, will be the amount to set off on the seat line.

The illustration in Fig. 1 at first glance may seem a complicated affair, but we believe that with a little study, taken in the order given, it will be clear. Study the relationship of one angle to another; don't give



is two inches thick, the amount to set off for the square corner, would be one inch; and this represents the point for the gauge line for any pitch the roof may have. If the corner is a true octagon, set off $5/12$ of one-half the thickness of hip; if a hexagon, set off $7/12$ of one-half its thickness. In other words, it is the same proportions that are used to obtain the

it up as something beyond reach, for it contains the whole roof framing subject in a nut shell. Remember the starting point is the plan, as at $A B C$. In this illustration the runs are 45 degrees apart. In the octagon, it would be a $22\frac{1}{2}$ degrees; the hexagon 30 degrees, etc. Remember too, that the triangles all contain a square corner.



Labor Costs and Money Lost

COSTLY AND FREQUENT BLUNDERS IN ESTIMATING—FIGURING BUILT-IN CASES AND CUPBOARDS, DOOR FRAME SETTING, EXPENSIVE SHINGLING, MITERED SIDING, CLOSET FINISHING, ETC.

By I. P. Hicks

NO ONE can deny that estimating the labor for the erection of a building is an important matter in the contractor's business. A bad job of estimating is a serious blunder right at the very start of the building, that no amount of hard work on the part of the contractor or the men he employs can make up. Sometimes what is lost on little things can be made up to some extent; but as a rule the contractor is short to the extent of all of his miscalculations,—and he finds that miscalculations are never made good without extra expense.

We confidently believe it is on the little odds and ends, in and about a building that the contractor loses most. This is partly due to the fact that much of this work is merely guessed at and not figured at all.

Take for example, a **medicine cabinet** built into a bath room. This looks like a very small matter; yet a contractor can hardly put one of these in for less than \$3.00—just for the labor of framing for the opening, casing it up and hanging the door. To furnish the material with glass mirror in door the expense would be, all told, between \$5.00 and \$6.00. Of course the owner would naturally think he was being held up on it; but not so. These little things cost money for the contractor.

Take the **setting of door jambs**. Contractors often lump this off, or forget it altogether. A man working eight hours a day at 45 cents an hour, would have to set fifteen pairs of jambs per day at 25 cents a pair, and at this rate the contractor would make only 15 cents a day off the man. Moreover the average workman would not average fifteen pairs a day.

Figuring that the jambs are mill made, delivered on the job in the knock down, it would not be safe for a contractor to figure less than 30 to 35 cents per frame for setting the jambs. Mill-made jambs are always dressed too nearly square on the edges, and should be dressed over by hand before they are set, in order to have the casings nail up tight to the jambs.

Take the matter of **shingling hip and valley roofs**. Here is where every contractor figures too little. Taking even a plain roof; the average workman will not average over 2,000 shingles per eight-

hour day. At 45 cents an hour the contractor would have to charge \$1.80 per 1,000 to come out even. Yet many will figure shingling at \$1.50 per 1,000. Such a price means nothing else than doing work at a loss. The contractor would make only a reasonable margin figuring shingling at \$2 per 1,000 on straight work. On hip and valley roofs figure \$2, per 1,000 and add 10 cents per lineal foot of hips and valleys. This is the only correct system. Under this method you add for just what there is of the extra work over the plain work. If it is a long or short hip or valley the amount is always in proportion, and it is the only safe guard against figuring this kind of work too low.

Take **mitered siding**; here is another place in the labor estimating where the contractor loses out. Take the $\frac{1}{2}$ by 4 inch siding which is now mostly used. It is worth \$1.50 per square on plain, straight work where corner boards are used. If there are to be mitered corners, add 10 cents per lineal foot of corner for each mitered corner. Then if there is much or little of it you get pay for what there is. This is the correct system to follow. It is better than to guess at a rate per square to cover it; for if there should be but a little of it you might figure the whole job much too high; and if there should be a lot of it, your price per square on the entire job might not be high enough. But with a charge of 10 cents per lineal foot of corner you are bound to come out about right for any amount, large or small.

The **finishing of closets** is another item often not figured at all; the contractor donates this work for the sake of getting the job. But it costs him money just the same to finish them up. He ought to figure \$1.50 per closet for labor for putting up the shelves, strips, etc. This may seem a little high; but it is these little odds and ends that are not figured that cause so much loss to the contractor. They cost the contractor money and if he expects to make a reasonable margin of profit on a job he must charge for everything the plans call for.

Figure everything in sight and then add 10 per cent for incidentals; for the best of us are sure not to see everything required to complete the job.

Take **pantry work**; this is where the contractor gets soaked. It is a rare case where this is figured high enough for the contractor to make good on the work. Figure shelves at 15 cents per lineal foot. Figure the counter shelf at 30 cents per lineal foot. Figure the frame work for drawers at 50 cents per drawer. Figure the fitting of drawers at 30 cents each. If the drawers are not mill made, figure 80 cents a drawer for making them. Figure the frame work for doors for cupboards or cases at 40 cents per

door. For fitting and hanging the doors figure \$1.25 per door for mill-made doors. For tilting flour bins figure \$2 each, and it will be none too much.

Pantries with all the frilles and ruffles that some people want them trimmed with are expensive features of the building; and if Mr. Contractor does not want to lose out on them in doing the work we advise him to go over the work in detail something like we have suggested. He will find it much more satisfactory in the end than guessing at the work.

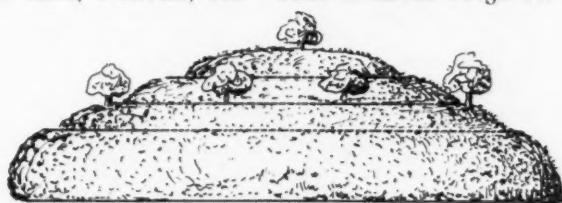
Shop Kinks

FOURTH ARTICLE—A GREAT MANY HELPS, HINTS AND IDEAS ON MILL WORKING, CABINET MAKING AND CARPENTRY WORK FROM THE EXPERIENCE OF A SHOP FOREMAN

By William C. Jasbury

HERE are some more odd things that have come to my notice in the mill.

I have turned wood cakes that were taken to a bakery to be frosted and otherwise decorated for fairs, festivals, etc. Take it about 10:30 A. M.



A "Jasbury Cake"

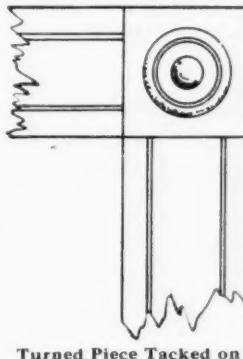
turning one of these fake cakes, the chips seems nearly fit to eat to a hungry mill man.

Speaking about **stair strings**, a Forstner bit put into an ordinary vertical boring machine is the wrinkle to house strings with. The cutter gives about the right depth and you can keep up nearly to the line; a good job for an apprentice boy.

In using the **pitch board** to lay out the risers and treads, I take the exact length of the long side or hypotenuse and step off all the way along the board (string), then keep the point of the pitch board to these points; do not change the compass but do the same to the corresponding string, assures accuracy, *i. e.*, both right and left hand string are alike.

What is meant by **blind nailing**? This is something I have had apprentices and older men ask. Blind nailing is this: Jab a chisel point into the wood, lift up a sliver, drive nail into the opening, let down sliver and put a touch of glue on it. This is used in hard wood where nail holes are not permissible; but is seldom used nowadays.

I one time saw a fellow who put up **corner blocks** plain, no turning; the owner wanted them a little fancy. So instead of taking them to the mill and having them turned, the workman tacked a scalloped flat cake on the face of each block after they were painted. It stood the acid test.



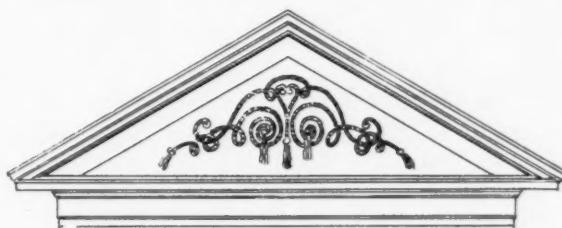
Turned Piece Tacked on

I know an **American cabinet maker** who files his saws straight across, instead of beveling; he says he can cut cross to an end better than the usual filing, and he gets away with it too, that is the laughерino part of it.

I know a **German cabinet maker** who does a lot of pounding on his chisels and gouges. He wraps the handles with tape (bicycle) which keeps them intact. Very good.

I know of a **residence** that has the gable scroll made of 1-inch rope twisted and frayed in such shape to look very unique.—Yes, rather!

I know another gable cemented and filled with various colored and shaped buttons and bottles put



Tasty (?) Rope Decoration for Gable

in while the cement was soft, also a gable studded with sea clam shells.—Anything for art!

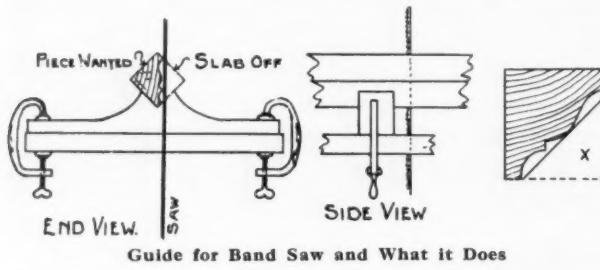
Quarter Sawing. I saw a lengthy experiment once on how many kinds of wood would show quarter. The answer was found to be three—oak, beech, and sycamore.

I know an **old carver** who had sixty-five different kinds of woods made into carving tool handles. A nice looking set. Last July they were destroyed by fire (in the shop) after a life time of hunting for the freak pieces.

I have seen **lignum-vitae** used for **bearings** where babbitt could not be obtained at the time; it does the trick all right unless you load it too heavy. It is of an oily nature and is very hard.

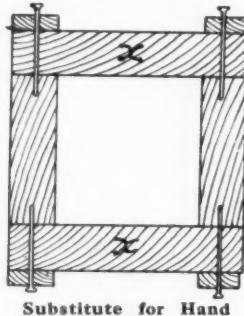
Next I show a guide for an ordinary mill scroll or band saw, it is used in cutting off corners of circle and straight work prior to going to the variety moulder. The corner cut off gives a lighter cut for the

variety moulder, also saves the piece to use in making a smaller moulding oftentimes. The guide has a notch sawed in it, and is placed just in front of the saw.



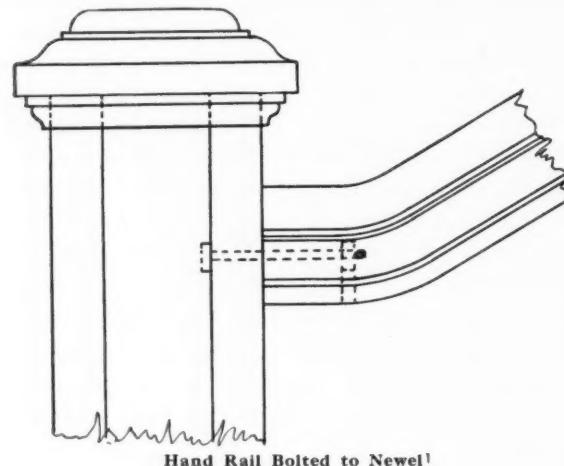
The notch, of course, is cut to the right angle to cut off to a certain line.

Here is a stunt on building up boxed columns to be turned. Fit them up on the bench previous to gluing. Where clamps, or hand screws are not plentiful enough or are being used, nail the sides "x" on with glue in the joint, use big head nails, but place waste edging along under the nail heads, so the edging can be split off later and the nails withdrawn as no nails can be left in columns to be turned.



In regard to stair work, I find a very secure way to fasten the hand rail to a newel is, when using hollow newels, to leave the cap off, until the rail is all fastened. Then you can get a hand down inside the newel far enough to tighten up the nut on the rail bolt.

Often hand rail is sent to a job crooked and very often has to be sent back. To put it up anyhow and make it come right, if the convex side is towards the



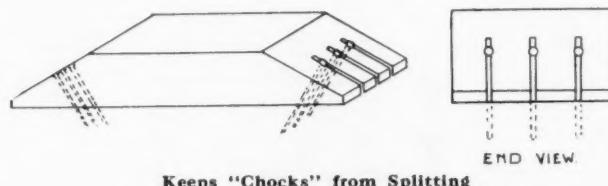
stair, put in a 2 by 4 inch brace or so, from the rail over to a flat board against the stair wall, drive brace down until rail is a little bowed out (the other way). Then nail in all the balusters. Take out brace and rail will come straight every time.

In getting out curved mouldings for stairs, I most always steam for bending many jobs of odd stuff, in a box made of 6-inch battens; inside measurements 6 by 18 inches and 10 feet long. I have one end tight, other end loose, where the stuff is pushed in. The tight end has the steam from a radiator drip, run into it. Temporarily nail up the open end. For steaming oak, I leave it in about 1½ hours.

A moulding such as a cove or quarter-round cannot be bent without twisting or buckling; bend them while yet square, then work the members; it can be made of waste strips, and not only saves material but eliminates the joints.

I steam for bending many jobs of odd stuff, in a box made of 6-inch battens; inside measurements 6 by 18 inches and 10 feet long. I have one end tight, other end loose, where the stuff is pushed in. The tight end has the steam from a radiator drip, run into it. Temporarily nail up the open end. For steaming oak, I leave it in about 1½ hours.

Now for a few odd ones. Take for instance "chocks" or wedging blocks for a flat car to hold a road roller, automobile, or any heavy piece of ma-



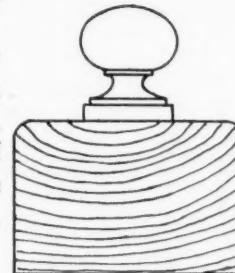
Keeps "Chocks" from Splitting

chinery. I saw some that had saw kerfs in the ends where the spikes were driven to keep the blocks from splitting.

In order to get the diameter of a pulley on a line shaft 12 feet above the floor, and no ladder available, I saw my brother hold a long stick up against the pulley edges (while the pulley was running) and the burns or marks on the stick gave the pulley diameter.

Judging a plane. How many mechanics have noticed the end of a (boughten) plane stock, to see how the annular rings of the tree run? The convex side should always be to the wear, as it is the hardest.

It's Tannic acid. Will the AMERICAN CARPENTER AND BUILDER tell the reading wood-workers the name (tannic acid) of the chemical found in oak and chestnut? I have heard many a mechanic wonder what it was that caused his hands to be stained blue while working these two woods.



End of Plane

How to Renew Color of Bricks

When red bricks of a fireplace get discolored with soot or have white spots on them, rub with a brick polish, the paste for which can be obtained at a brick-yard or paintshop. If this paste cannot be found, rub the bricks with linseed oil, giving them all they will absorb. This treatment may be repeated several times if the bricks are much discolored. Where brick pavements are discolored with moss or green mold, scrub with a strong solution of household ammonia and water or with washing soda and hot water.



How to Make a Fireless Cooker

THE "FIRELESS" COOKER AND WHY IT COOKS—COMPLETE DETAILED INSTRUCTIONS FOR THE AMATEUR FOR MAKING THIS FUEL SAVING DEVICE



THE making of a fireless cooker is always in season. In summer time it is in demand as a saver of unnecessary heat. In winter it will be wanted to care for the cooking of the breakfast foods and thus economise fuel. No invention in recent years has so appealed to the good housewife as this. Hardly

a home but has a fireless cooker or wants one.

They are not at all difficult to make and the principle upon which they depend for their efficiency is so well known now that it is not necessary to more than mention it. The writer well remembers the first time he was told of cooking food without heat. While he was polite enough to not say so aloud, he remembers thinking seriously that the speaker was not sincere.

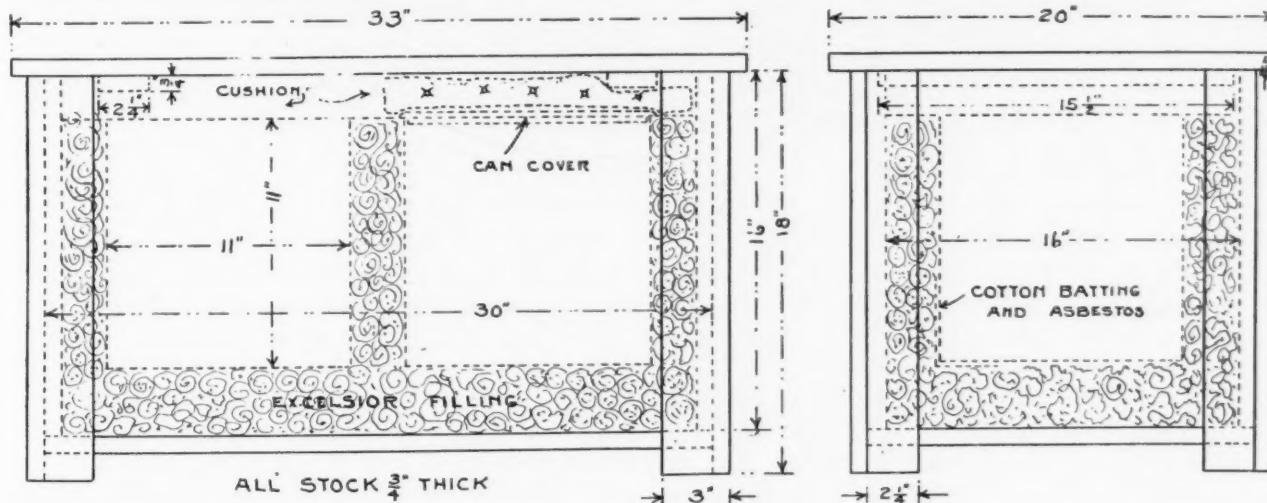
The secret of the whole thing, of course lies in one's ability to preserve the initial heat put in the box with the food until it has thoroughly penetrated the food. On this account, the more nearly we can make the food receptacle a non-conductor of heat, the better.

The box, the photograph of which is shown, is of quite generous proportions and will care for rather large sized kettles. The wood part of the box is to be made first. For this there will be needed the following pieces:

STOCK BILL FOR FIRELESS COOKER.

Lid, 1 piece, $\frac{3}{4}$ by $20\frac{1}{2}$ by $33\frac{1}{2}$ inches, S-2-S.
 Sides, 2 pieces, $\frac{3}{4}$ by $16\frac{1}{2}$ by $30\frac{1}{2}$ inches, S-2-S.
 Ends, 2 pieces, $\frac{3}{4}$ by $16\frac{1}{2}$ by $16\frac{1}{2}$ inches, S-2-S.
 Bottom, 1 piece, $\frac{3}{4}$ by 18 by $30\frac{1}{2}$ inches, S-2-S.
 Posts, 4 pieces, $\frac{3}{4}$ by $2\frac{1}{2}$ by $18\frac{1}{2}$ inches, S-2-S.
 Posts, 4 pieces, $\frac{3}{4}$ by $3\frac{1}{4}$ by $18\frac{1}{2}$ inches, S-2-S.
 Cleats, 2 pieces, $\frac{3}{4}$ by $2\frac{1}{2}$ by 16 inches, S-2-S.

The box can be made of any convenient wood. The wood used on the box shown was chestnut. This



FIRELESS COOKER

wood is soft, works easily and when filled and varnished makes a fine appearance. Yellow pine finished natural will be appropriate. White pine or yellow poplar painted will answer just as well.

The construction is as simple as possible. The corner joints are merely butt joints, the sides being nailed to the ends. When the sides have been nailed to the ends, the four corner posts should be placed and nailed. Next, fit the bottom; but do not nail it in place yet. The top is one piece strengthened by means of two cleats on the under side. Before hinging the top, the metal part of the cooker should be placed and the filling put in.

The metal part should be made of zinc. There will need to be a sheet of metal of a width and length somewhat in excess of that of the interior of the box, about one-half inch on each of the four sides. This is to be bent up and through it tacks are to be driven into the sides of the box. The two cylindrical receptacles for the food are to be 11 inches in diameter and the same depth. A tinsmith will be needed to make this part of the affair.

Place the metal, then nail it along the marginal metal turned up for that purpose, as well as to hold any water or grease that might be spilled in the box. Turn the box upside down and encase the metal with asbestos, then cotton batting, and fill with excelsior closely packed. Fasten the bottom, then upturn the box and hinge the lid.

Several hooks will be needed to draw the lid tightly into place. To further assist in keeping the heat from escaping from the top, there will need to be two lids of a size and shape to fit the openings snugly. On top of these there are to be placed two especially made cushions—cushions that are thick enough to be pressed snugly and completely over the lids when the box lid is closed and hooked.

To further assist in cooking, especially meats or anything requiring long, continued heat, two soap stones of circular shape should be warmed and placed in the bottom of the metal receptacles before the meat is put in. The more modern cookers are arranged so that the material to be cooked is suspended in the upper part of the receptacle.

Gypsum and Gypsum Products

GREAT VALUE OF THE GYPSUM INDUSTRY IN AMERICA—PLASTER BOARDS, GYPSUM STUDDING, HARD-WALL PLASTER, ETC. AS MODERN FIREPROOFING MATERIALS

By W. H. Price

THE question of better and safer building construction has for some time been agitated generally throughout the country. This applies to all classes of building and has naturally had a tendency to do away with the poorer class of building materials. For instance, fireproof construction in 1910 had a gain of about five per cent and slow burning construction a gain of about twenty-five per cent over the previous year.

Startling Figures—Property Wiped Out

The demand for safer and better building construction was no doubt augmented considerably by a report made by the United States Geological Survey covering an inquiry made in 1908 into the fire losses of this country for the year 1907, which brought out some startling figures. This investigation disclosed the fact that the total cost of fires in the United States for 1907 amounted to almost one-half the cost of new buildings constructed in the country for the same year. The total cost of the fires, excluding that of forest fires and marine losses, but including excess cost of fire protection due to bad construction, and excess premiums over insurance paid, amounted to over \$456,485,000, a tax on the people exceeding the total value of the gold, silver, copper and petroleum produced in the United States in that year.

The actual fire losses due to the destruction of buildings and their contents amounted to \$215,084,709, a per capita loss for the United States of \$2.51. The per capita losses in the cities of the six leading European countries amounted to but 33 cents, or about one-

eighth of the per capita loss sustained in the United States. In addition to this waste of wealth and natural resources, 1,449 persons were killed and 5,654 were injured in fires.

These enormous losses are undoubtedly due to the inflammable construction of buildings, for in Europe where fireproof construction prevails, there is no such loss from this source, fires being more readily confined to the building in which they started. It is even more notable that of the enormous fire loss mentioned over 2/3 of the amount was on frame buildings of common construction.

Gypsum's Part in Modern Building

In the modern better class of building construction gypsum products are playing a very important part, and as a result the gypsum industry has enjoyed a remarkable increase in business during the past few years.

The importance and value of gypsum and the extent of the industry in this country is realized by comparatively few people—the public generally is very much in ignorance on the subject. Some idea of its magnitude may be gained through the fact that millions of tons of gypsum are now annually made into wall plasters and wall finishes of various types, fireproof partition tile, gypsum fireproof studding, plaster boards, plaster of Paris, casting and moulding plasters, dental plasters, wall coatings, stucco, staff, etc., the manufacture of each product requiring a special process. Portland cement contains about two per cent of gypsum, and gypsum is also used extensively by plate

glass manufacturers; the latter requiring the material in the form of a quick setting stucco.

In the "loop" district of Chicago we have two striking examples of gypsum products as made for two distinct purposes. In the heart of modern Chicago, where fireproof building construction is essential, every fireproof office, bank or other important building erected during the last six years or more has been plastered throughout with gypsum wall plaster, while over in the Art Institute may be seen some fine examples of gypsum when manufactured into casting plaster and used for statuary, etc.

In 1907 the total value of the output of the gypsum industry was about \$8,000,000, while that of the past year the figures are estimated to be somewhere near \$25,000,000. This, of course, is a tremendous rate of gain and shows the wonderful strides the gypsum industry has made within the last three years.

Gypsum products are rapidly relegating old-fashioned methods of wall construction. Plaster board is taking the place of wood lath; and gypsum wall plaster has supplanted lime mortar in the better class of buildings. This condition, however, is natural when we take into consideration the fact that gypsum is a fireproof material and a big time saving factor. When made into plaster board gypsum represents one of the best and most economical insulators against fire, heat and cold—advantages impossible to secure with former methods, and when plastered over with gypsum plaster, on account of the affinity between the products, the board and plaster become a solid mass forming a dense,

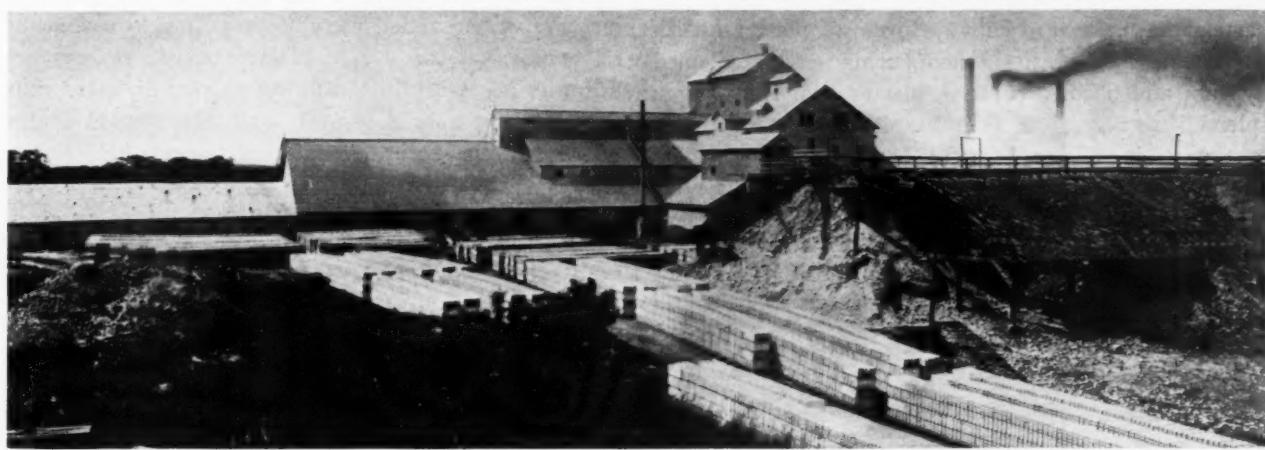
purchasers or tenants to inspect the walls of the building, as no one who knows the value of plaster board and hard plaster wants to live in a house with walls built in the old way, where cracks, pops and spoiled decorations are more or less constant eye sores. The wiser builders of apartments in the larger cities have also discovered this and are specifying plaster board and gypsum plaster, knowing that this makes the building or apartment more desirable to tenants because of the fireproofing, soundproofing and the many other advantages of gypsum products which naturally appeal to prospective home owners or tenants.

Uses of Gypsum

The technical uses of gypsum are manifold. Wherever insulation against heat and cold is desired there gypsum may be found, thus we find the so-called "Asbestos pipe covering" to be 90 per cent gypsum, the dentists' muffle furnace to be jacketed with gypsum, the cold storage house to have partitions and wall furring of gypsum blocks, etc.

For the purpose of fireproofing, gypsum is used in a number of ways, the most common being plastering on metal lath, plaster board plastered over with gypsum plaster, gypsum tile for partitions, column covering, wall furring, etc., and gypsum studding used in connection with plaster board or metal lath and plastered over with gypsum plaster.

Analyzing the special features of gypsum in general which make the material desirable as fireproofing, it has the following advantages: Low conductivity



A Typical Large, Modern Gypsum Plant—Note Piles of Gypsum Fireproof Partition Tile

strong, durable wall. The walls made of gypsum materials in this manner are coldproof and heatproof, making the building more comfortable both during hot or cold weather. Then again gypsum, either in plaster or in the plaster board, does not contract or expand; thus marring the walls by cracks, pops, and stains, the common troubles of old wall methods.

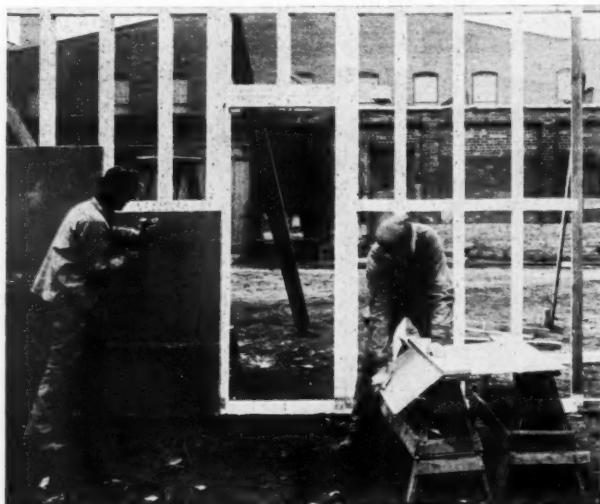
Lime mortar and wood lath belong to the materials of yesterday, and the fact that they represent only firetrap construction is being discovered rapidly by both builders and tenants. In this day of progress it is not an infrequent occurrence for prospective

of heat; low co-efficient of expansion, practically zero; resistance to water under fire conditions; incombustibility; lightness; strength; adaptability or plasticity; and low cost.

Low heat conductivity is an essential point. In partitions heat is not conducted through to set fire to furnishings, etc., on the opposite side. In the protection of structural steel work the steel is protected from the weakening action of heat. Many fires attain a temperature of 2,000 degrees F. At 1,700 degrees F. a steel column can only bear its own weight. Heat penetrates gypsum at such a slow rate

that in the fires of ordinary duration the metal would hardly get warm. Tests and experiments have failed to indicate any appreciable expansion of gypsum under heat action.

Gypsum plaster properly applied on metal lath forms strong, substantial fireproofing. The gypsum plaster provides for the fire resisting properties of this form of



Carpenters Fitting and Nailing Plaster Board to Wood or Gypsum Fireproof Studding

construction, the metal fabric being used as a base for the plastering and as a strengthening mesh.

Plaster board is too well known as a reliable and satisfactory modern building material to need any extended explanation here. Gypsum plays an important part in the make up of many forms of plaster board. In thickness of $\frac{1}{4}$ to $\frac{1}{2}$ inch, composed of calcined gypsum and fibrous material, plaster board has given splendid results as a fire retardant when used for partitions, ceilings and furring.

The $\frac{1}{2}$ -inch board is in the class of high fire retardants and as such is used in buildings of ordinary construction for the fire protection of stairs, etc., being required for this purpose by the building laws of many cities.

In connection with incombustible studs, plaster board makes a fire-resisting partition of high class for use in office buildings, etc., where lightness and soundproofing are desirable.

An incombustible stud made of calcined gypsum is attaining great popularity, especially in connection with plaster board. This stud is made 3 by 3 inches in 8 to 12 foot lengths, reinforced with two strips of wood, these strips being in the center of the stud are completely embedded in gypsum concrete.

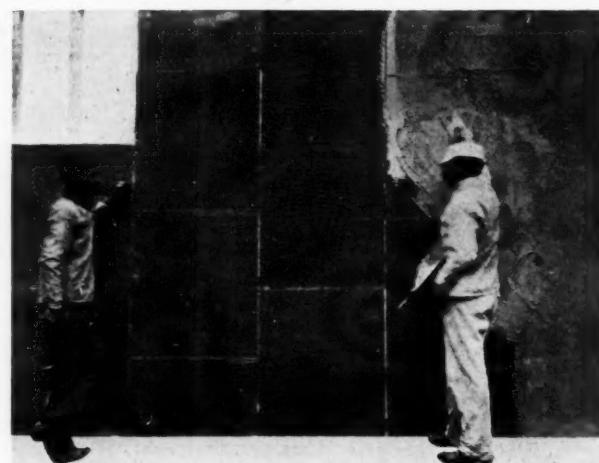
A partition constructed of these two materials is light in weight, soundproof and affords high fire protection at a cost not very far in excess of wood construction. One of the illustrations shows two carpenters at work on such a wall. The studs are handled and erected in the same manner as wooden studding, being generally set on 16-inch centers, but

instead of toe-nailing they are fastened at plates, sills and bridging by galvanized sheet metal clips. The plaster board is applied as to ordinary studding, breaking joints every other board horizontally and nailing with galvanized wire nails $1\frac{3}{4}$ inches long with large head. Both the studs and the plaster board are easily cut with an ordinary saw, and with the exception of plastering, this fireproof partition is erected entirely by the carpenter.

Plaster boards have been in use for the past fifteen years. They were primarily designed to take the place of wood lath and as such have played an important part in the building of the country. For general lathing purposes the board is made in thicknesses of $\frac{1}{4}$ and $\frac{3}{8}$ inches, the $\frac{1}{4}$ -inch thickness being in most common use. The size of each board is uniformly 32 by 36 inches. Light in weight, tough and easily applied, it is nailed direct to studding, furring or joists and is plastered over just the same as any other lathing material.

Another of the illustrations shows a comparison of the three best known plastering surfaces, wood lath at bottom, metal lath in center, and plaster board at top and side, applied to wood studding. The companion view shows the reverse side of this wall after plaster coat has been applied and presents an interesting example of the relative waste of plaster behind the wall in the use of these materials.

In plastering on wood lath about 30 per cent of the base coat plaster is pushed through the interstices to form "keys" or "clinches" and about 50 per cent of the mortar is used in the same way in plastering on wire or expanded metal lath. This is practically all avoided in the use of plaster board, as keys are no more necessary in plastering on plaster board than in plastering a brick or tile wall, the suction in the board and the natural affinity of the gypsum plaster



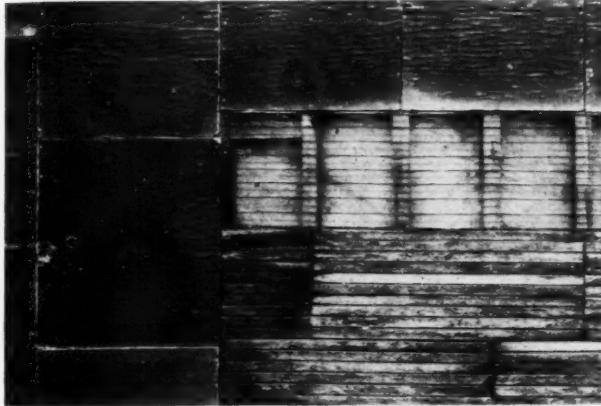
Carpenter and Plasterer Work Side by Side Where Plaster Board and Gypsum Are Used

for the gypsum in the plaster board being sufficient to make a solid substantial wall.

However, there is a right way and a wrong way to use any material and plaster board must be used right

in order to obtain the best results. The writer has been a close observer of modern building materials in general and has often heard adverse comment on very meritorious materials because some builder or mechanic happened to have trouble in their use. And thus the sale of a good product is sometimes temporarily injured in a market when the fault is not with the product but entirely due to a wrong application—a misunderstanding as to the proper use of the material.

Plaster board is not a substitute for both lath and plaster as sometimes misunderstood, but is a lathing material only and should be covered with a good coat of gypsum plaster, not less than $\frac{1}{2}$ inch over the face



3 Plastering Surfaces—Wood Lath, Metal Lath and "Boards"

of the board. Improper application of the board or the attempt to get a good job by using a thin coat of plaster often results in dissatisfaction. The proper method of applying plaster board is to break joints every other board horizontally on the walls, which is easily done by starting every other tier with a half board. Joints should be broken on ceilings every other board at right angles with furring or joists.

It is important that the boards be spaced not less than $\frac{1}{4}$ to $\frac{1}{3}$ of an inch apart on all sides, and these spaces or joints should be well filled with gypsum mortar, forming a good key and allowed to set before the base coat is applied. By filling in the joints in this manner the boards are all joined together into a homogeneous mass, forming a solid plastering surface and also preventing any cracking at the joints.

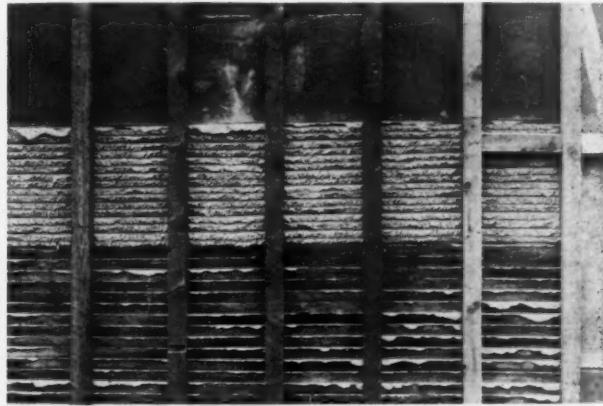
The plaster coat is applied to the dry board and the two materials bond together perfectly. The excessive amount of water required in plastering on wood lath has always been one of the serious objections to that material as this moisture not only warps and buckles the wood lath but also frequently warps the trim and frame work and is often responsible for many of the cracks and other defects in walls and ceilings.

Plaster board absorbs the small amount of excess moisture in the base and finish coats of plaster, keeping the water away from the frame work, and on account of the absence of the wood lath the use of

plaster board removes the very element that is largely responsible for plaster cracks, as gypsum either in the board or plaster coat does not contract or expand and is stainproof.

Considering all the good features of gypsum products from a fire-retardant standpoint, its low cost and the extent to which the material is found, it is evident that gypsum will play an enormous part in the building construction of the country.

This country is blessed with a vast supply of gypsum, and the deposits are located from New York to California in a manner which makes it possible to distribute the manufactured products throughout the United States at an economical cost to builders. Gyp-

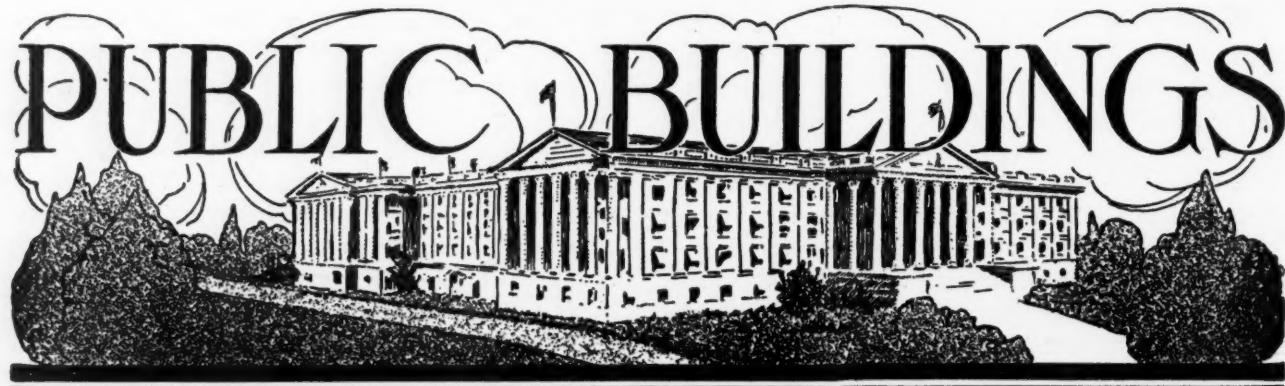


—And Rear View Showing Relative Waste of Plaster

sum deposits are located in New York, Ohio, Michigan, Iowa, Oklahoma, Kansas, Colorado, South Dakota, Montana, California and other states.

Danger From Defective Flues

It is a sad commentary on American methods of building, American laws concerning building, and the American habit of carelessness that defective flues should be responsible for twice as many fires as any other known cause. It is estimated that 13 per cent of the total number of fires annually can be attributed to defective flues, with an average property loss of about \$13,000,000. The destruction of the cotton compress at Laurel, Mississippi, on December 16, 1910, with a loss of over \$300,000, was due to a little brick-on-edge flue through the cracks of which sparks spread to the property. The money lost in this fire would have paid for the removal of every bad flue in the state of Mississippi. Carelessness in the construction of flues has become so general in the south that the insurance companies have been forced to penalize dwellings with improperly constructed flues. In most of the states the charge is 35 cents for each defective flue in the dwelling. It is hoped that this increase will call the attention of property owners to the hazard and lead to its correction, and in the meantime the companies are reimbursed for the risks they run by an increased rate.

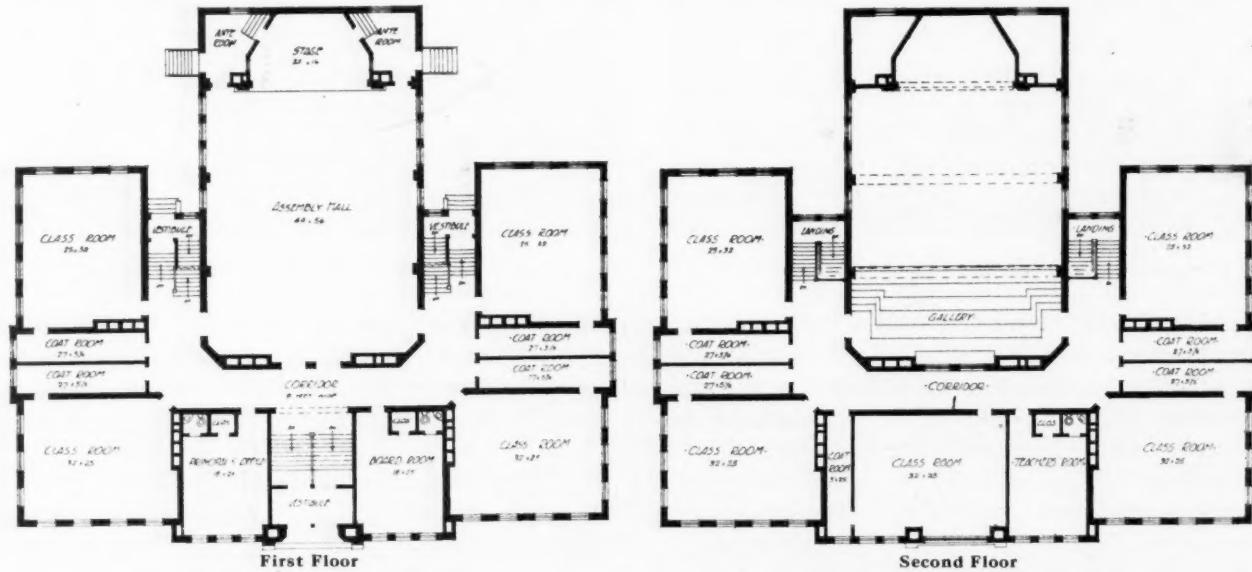


New School for Dolton, Ill.

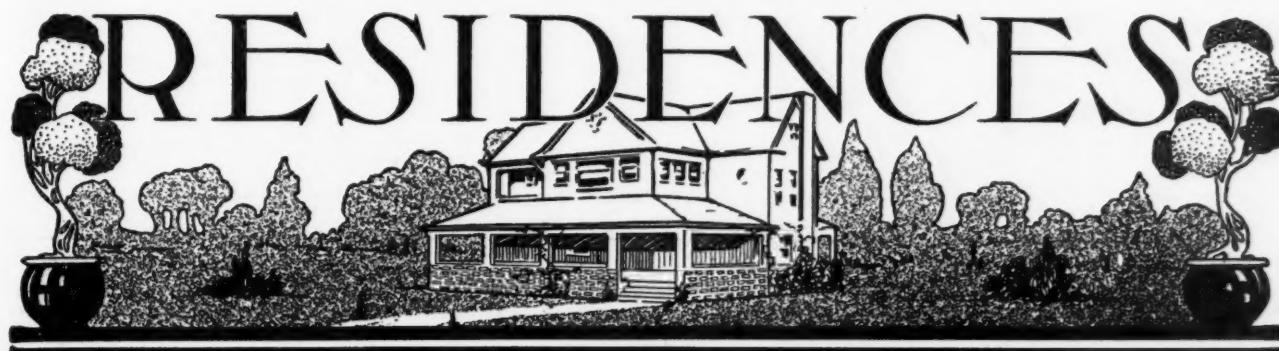
ARCHITECT'S DRAWINGS OF NEW BUILDING FOR SCHOOL DISTRICT 148, BIDS FOR WHICH ARE TO BE
OPENED MAY 8TH

THE new Dolton school is to be a building of dark red brick with white stone trimmings; it contains nine class rooms, three large offices and a two-story assembly hall that will seat 600.

Manual training and domestic science departments, also toilet rooms, are in the basement. Geo. H. Schaefer is president and F. W. Robison clerk of the school board; G. W. Ashby is the architect.



New Lincoln Ave. School, Dolton, Ill.; Architect, G. W. Ashby, Chicago



Plans for Seven-Room Hip-Roof House

COMPLETE SET OF PLANS, WITH ALL DIMENSIONS AND DETAILS FROM WHICH THIS MODERN PRACTICAL RESIDENCE CAN BE BUILT

THE hip-roof house continues in favor this season with the home building public. The design illustrated herewith has much to recommend it, and it will be found to meet pretty closely the needs of many home builders. On the pages immediately following this, the complete set of architect's drawings is reproduced from which this residence can be built.

the special features of interior trim have been carefully detailed. A study of these plans will bring out many interesting and valuable points.

This house is well suited for a narrow building site, being 28 feet in width. The striking features of the main floor are the extra large sized living room, with fire place nook; the dining-room with paneled ceiling;



Up-to-Date Stucco House Designed for Mr. J. A. Beckwith of Chicago
COMPLETE WORKING PLANS FOR THIS HOUSE ARE PRESENTED ON THE 7 PAGES FOLLOWING

As all drawings are to scale and have the dimensions plainly marked, they will be of real practical service to our readers. They have been drawn up very completely, showing the location of all interior fixtures, electric lights, heating radiators, plumbing, etc., and

and the conveniently located kitchen. The stairway treatment is worthy of special attention. The plate of details shows the stairway approach from the living-room. Note how the stair landing is divided into three steps.



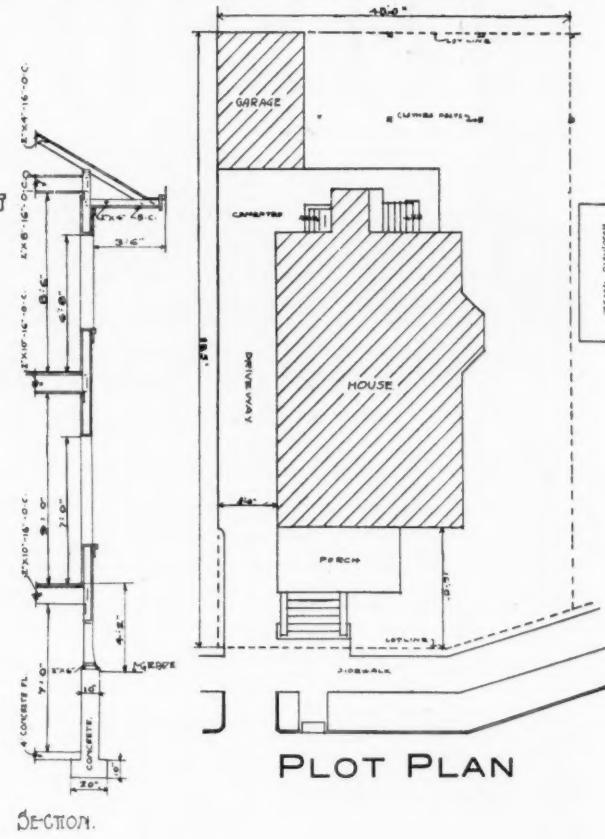
FRONT ELEVATION
House Shown on Page 63

On the second floor are four bedrooms; three of them of large size and all are supplied with very generous clothes closet space.

Two-Coat Work and Priming

Custom has grown up among painters under the modern pressure for cheapness, which is much to be deplored and which painters who esteem their profession should combat with all their strength and influence. It is the custom of applying only two coats of paint to new wood.

Architects (and painters too, we fear) are in some cases to blame for the growing demand for this makeshift kind of painting and the owner who does not understand the causes and effects underlying painting rules can hardly be blamed for being willing to risk two-coat work if his architect specifies it and his



PLOT PLAN

painter does not protest.

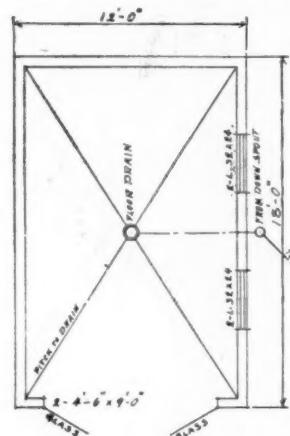
The greatest evil which arises from two-coat painting on new wood is the necessity of a thick primer which it entails.

A thick priming coat on new wood is one of the most frequent causes of paint's peeling.

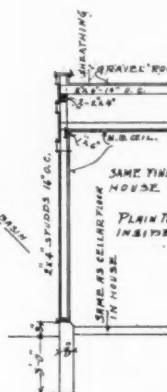
A priming coat should be very thin—not a bit less than 7 gallons of vehicle to 100 pounds of white lead. Some good old-fashioned painters whom we know think even that is too thick. However, we know from long experience that 7 gallons of thinner will give excellent results.

Now a thin primer like that will not cover a new surface, and *should not be expected to*. But it *will* anchor deeply into the pores of the wood, and the later thick coats will not pull it off nor will they pull away from it.

But, if two-coat work is demanded, the painter *must*

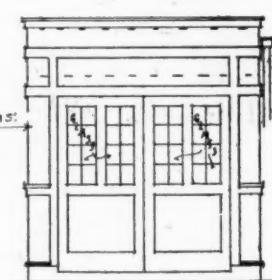


GARAGE PLAN

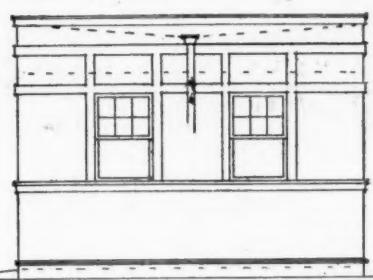


SECTION
WORKING PLANS OF GARAGE

For Perspective See Page 63



FRONT ELEVATION



SIDE ELEVATION



RIGHT SIDE ELEVATION

as a rule, sacrifice the idea of a thin priming coat, and as soon as he gives up the thin primer he runs the risk of the paint's peeling.

gracefully when an owner asks "Won't two coats do?" but it would be better *business* in the long run to explain the theory of the thin primer, and show where

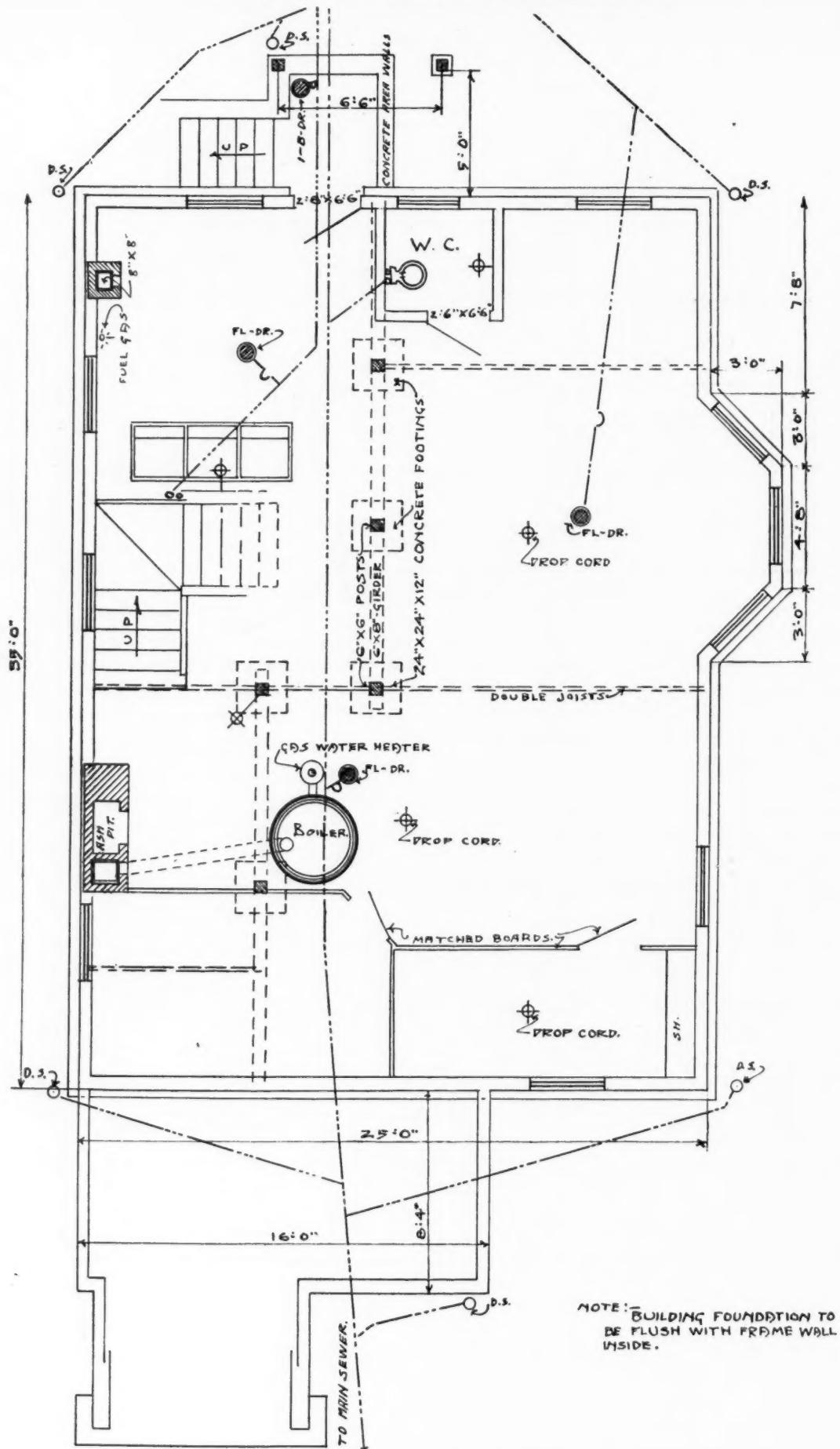


LEFT SIDE ELEVATION

House Shown on Page 63

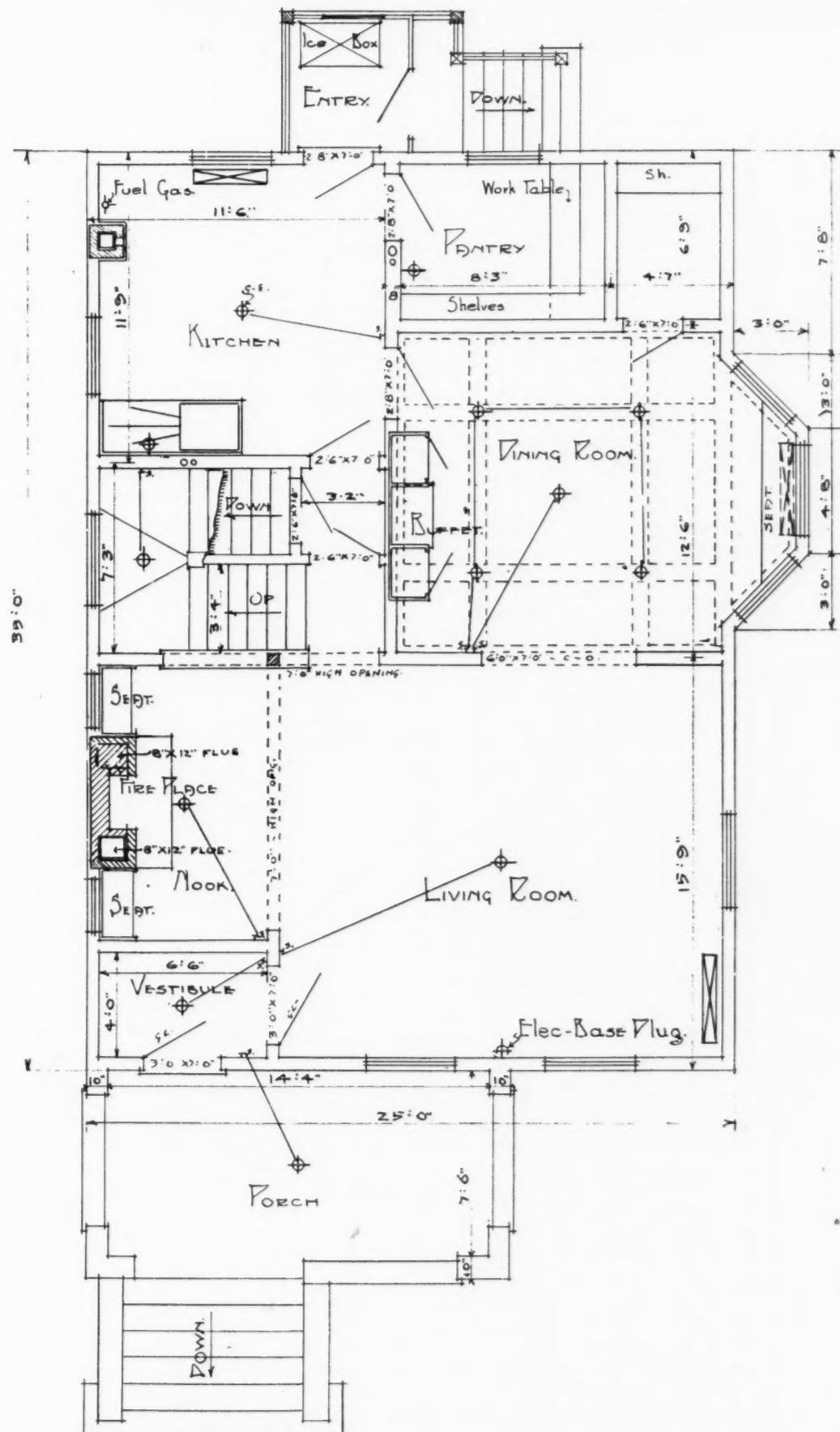
The owner doesn't understand, and blames the trouble on the paint or the painter or both. It is perhaps the path of least resistance to yield

he will save money by having three coats applied, including a thin *lead and oil* primer.—*The Dutch Boy Painter.*



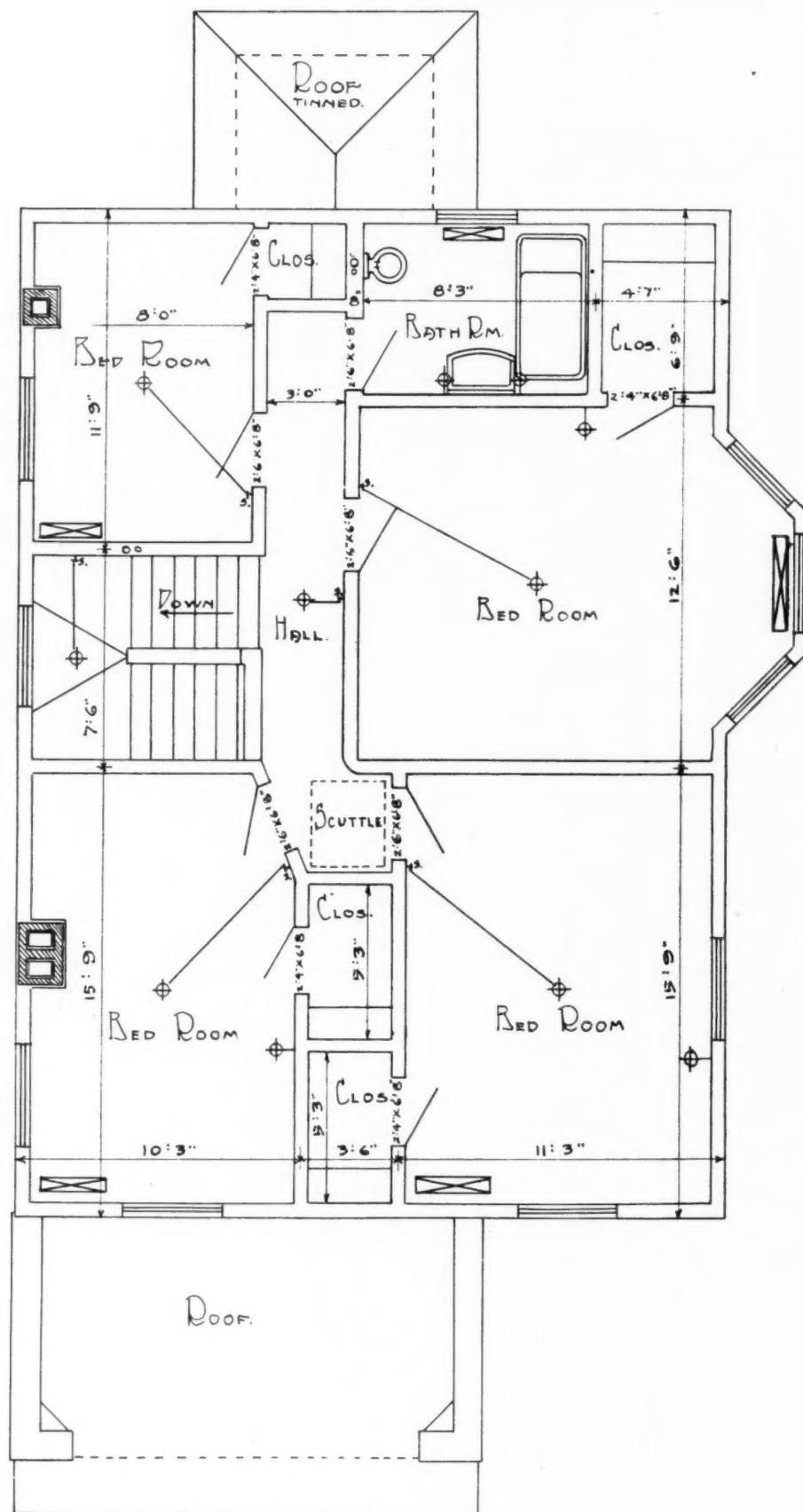
BASEMENT AND FOUNDATION PLAN

House Shown on Page 63



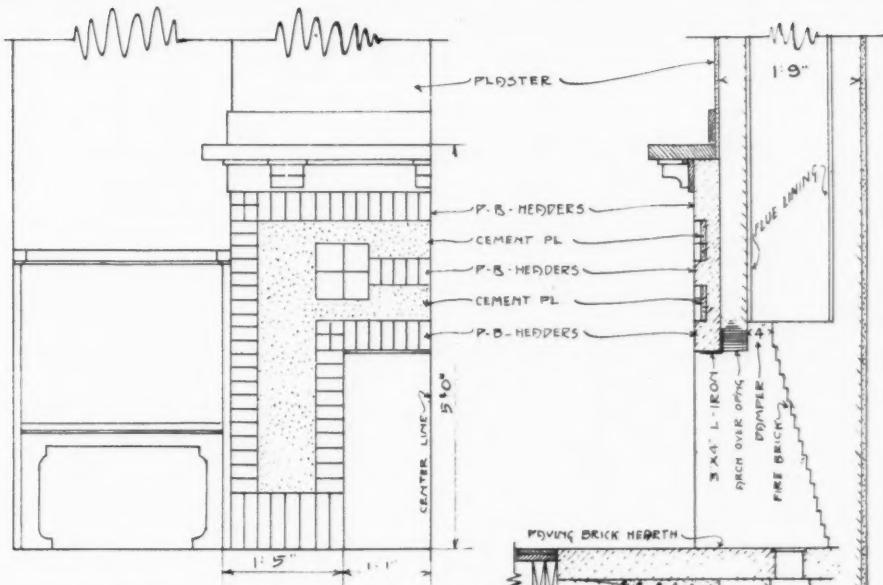
FIRST FLOOR PLAN

House Shown on Page 63

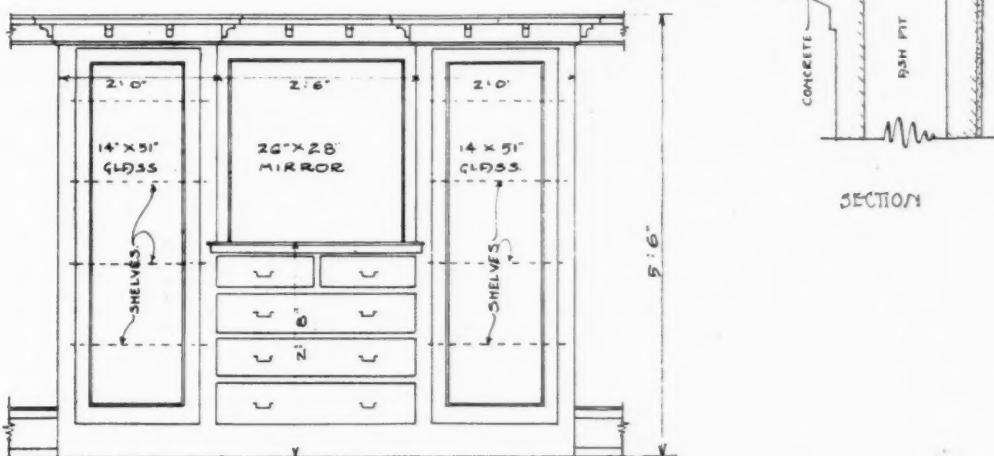


SECOND FLOOR PLAN

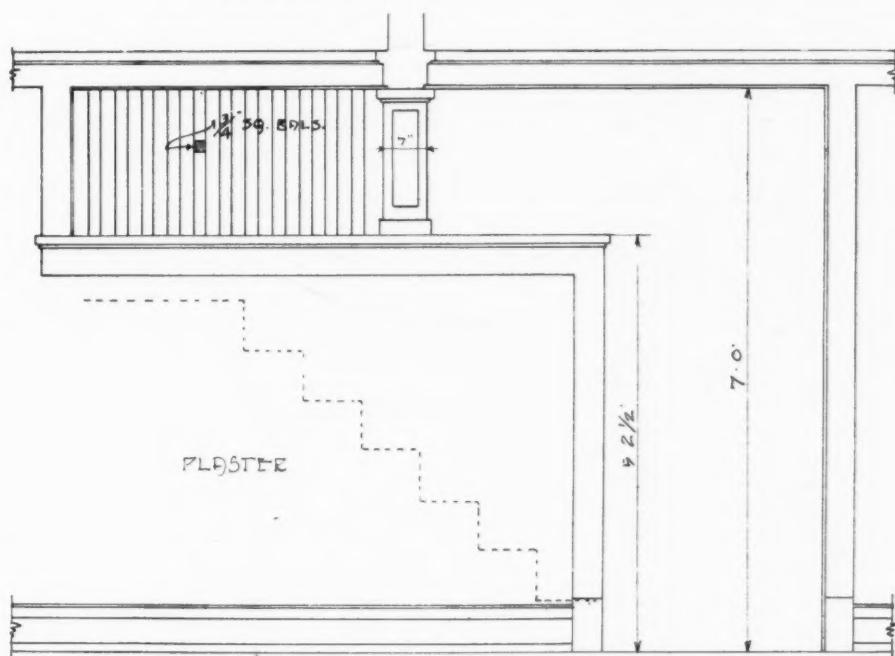
House Shown on Page 63



ELEVATION OF SEAT AND HALF FIRE PLACE.



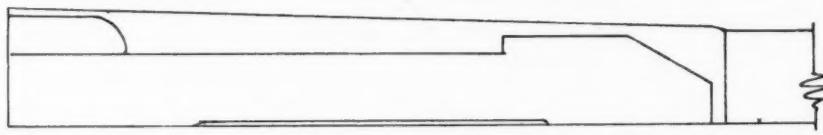
ELEVATION OF BUFFET



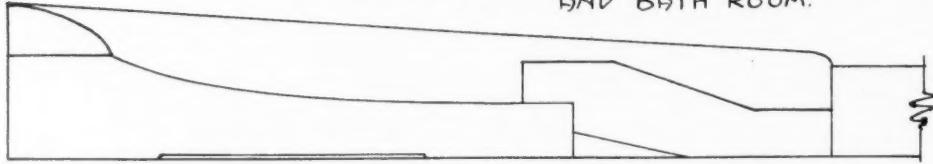
ELEVATION OF STAIRWAY APPROACH

DETAILS OF SPECIAL FEATURES OF INTERIOR TRIM

House Shown on Page 63



THIS BASE TO BE USED IN KITCHEN, PANTRY, ALL HALLS, CLOSETS, BED ROOMS AND BATH ROOM.



THIS BASE TO BE USED IN LIVING ROOM, DINING ROOM, NOOK & VESTIBULE.

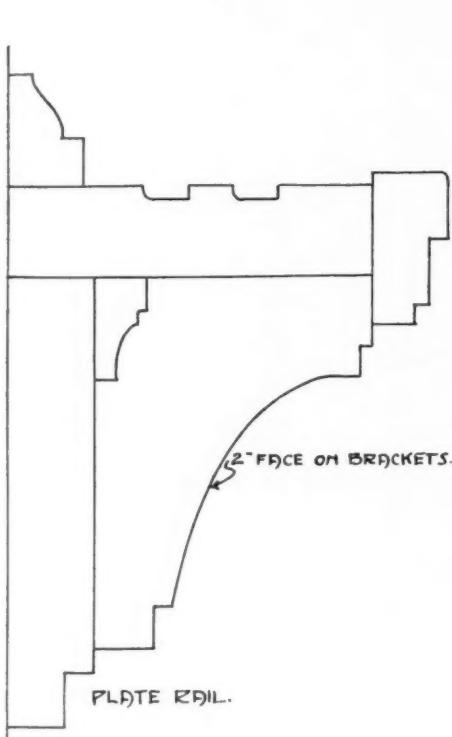
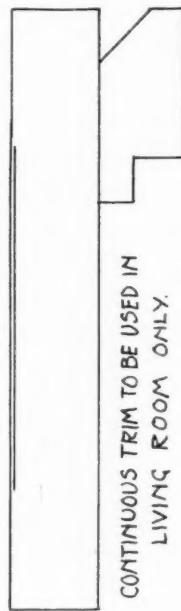
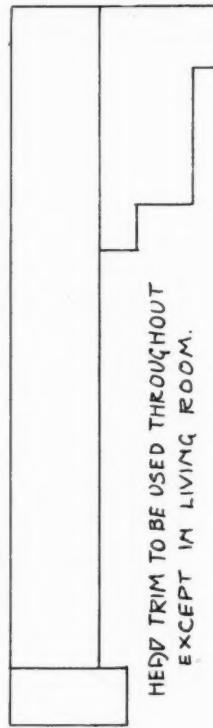


PLATE RAIL.

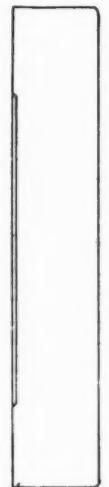
2" FACE ON BRACKETS.



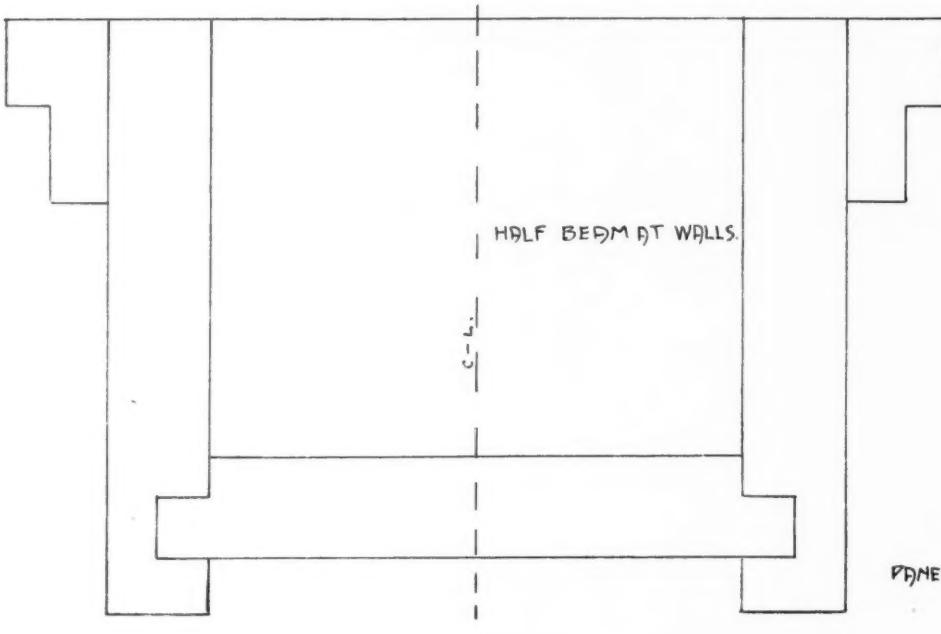
CONTINUOUS TRIM TO BE USED IN
LIVING ROOM ONLY.



HEAD TRIM TO BE USED THROUGHOUT
EXCEPT IN LIVING ROOM.

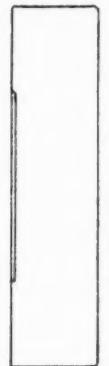


CHAIR RAIL.



HALF BEAM AT WALLS.

CEILING BEAM.



PANEL STRIPS TO BE USED IN DINING RM.

LARGE SIZE DETAILS OF INTERIOR TRIM

House Shown on Page 63

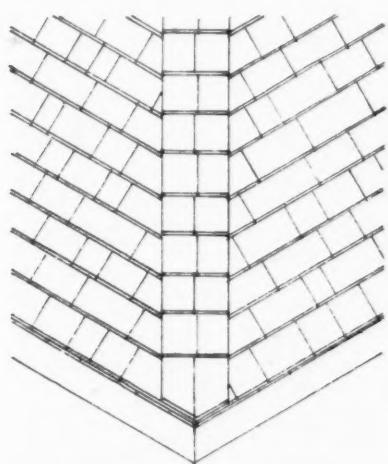


The Boston Hip

To the Editor: Wagon Mound, New Mexico.
Will you please tell me, through the AMERICAN CARPENTER AND BUILDER, with illustration, how to lay the "Boston Hip"?

S. O. MORRISON.

Answer: The accompanying sketch shows a perspective view of the "Boston Hip," as seen from above. This is a style of work that makes a very good appearance and has some popularity in the east, especially with shingled houses. It is rather too fussy, however, to be generally liked by carpenters. The "Boston Hip" is formed by laying a double row of shingles lengthwise along the hip, fitting them carefully so as to make a water-tight job. These hip shingles are nailed on after all the rest of the shingling is done. The middle joint alternates from one side to the other along the hip. EDITOR.



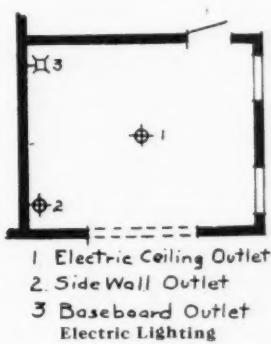
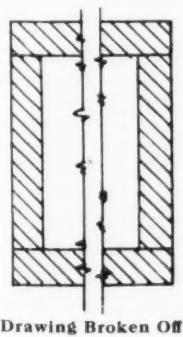
Boston Hip Viewed from Above

rest of the shingling is done. The middle joint alternates from one side to the other along the hip. EDITOR.

Conventional Signs Used in Drafting

To the Editor: Osage City, Kansas.
I would like to know what the broken lines indicate which are often seen on working drawings, especially detail sheets, as for instance, the details published on pages 40 and 41 of the March number. There seem to be a good many of these broken or jagged lines and I do not know what they mean. Also please explain the meaning of the small crossed circle in the middle of the room. I think I understand everything else thoroughly except these two points.

We look for the AMERICAN CARPENTER AND BUILDER every month as a friend from home. LARSON & RYDELL.



Drawing Broken Off

Answer: The conventional signs referred to are illustrated in the accompanying sketch. The jagged lines indicate that the drawing is broken off. This is necessary when some complicated portion of an object is picked out for large size detailing. The detail drawing cannot show the complete object but only a part of it and the jagged line simply acts as a sort of frame to indicate that a part of the object has not been shown. For instance, in the accompanying sketch we have a detail of a square box column. To save space, however, part of the sides is left out, and the drawing compressed. A dimension line spanning this space would show the true widths of the column.

The small crossed circles referred to indicate electric ceiling outlets. No. 1 in the accompanying sketch shows electric ceiling outlet; No. 2 side wall electric outlet and No. 3 baseboard outlet.

EDITOR.

To Obtain the Backing of the Hip

To the Editor: Winnsboro, La.
I see a number of good things in your correspondence columns every month, but I have a simple little trick for obtaining the proper bevel for the top of hip rafters, which

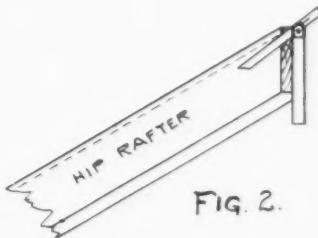
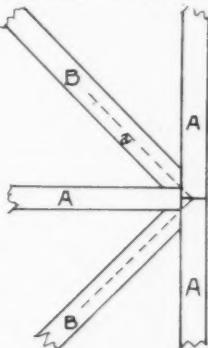


FIG. 2.

FIG. 1. PLAN.

I have never seen in print. So I enclose a rough sketch, hoping it will benefit some of my "Brother Chips."

Fig. 1 shows where the hip rafters B-B are joined to the common rafters, A-A-A. After the hips are cut to fit, simply set the bevel to the top cut of common rafter and apply to top end of hip rafter, as shown in Fig. 2. It does not matter how thick the rafters are, or if the roof has unequal pitches; this will give the correct bevel for the top edge of the hip rafter every time.

F. W. JONES.

Built-in Book Case with Writing Desk

To the Editor: Lebanon, Pa.
I am a Charter Member subscriber to the AMERICAN CARPENTER AND BUILDER and I think a whole lot of it. I am very much interested in your correspondence department and also very much in the projects presented in the Home Workshop department.

Herewith is a rough sketch of a second story room which is

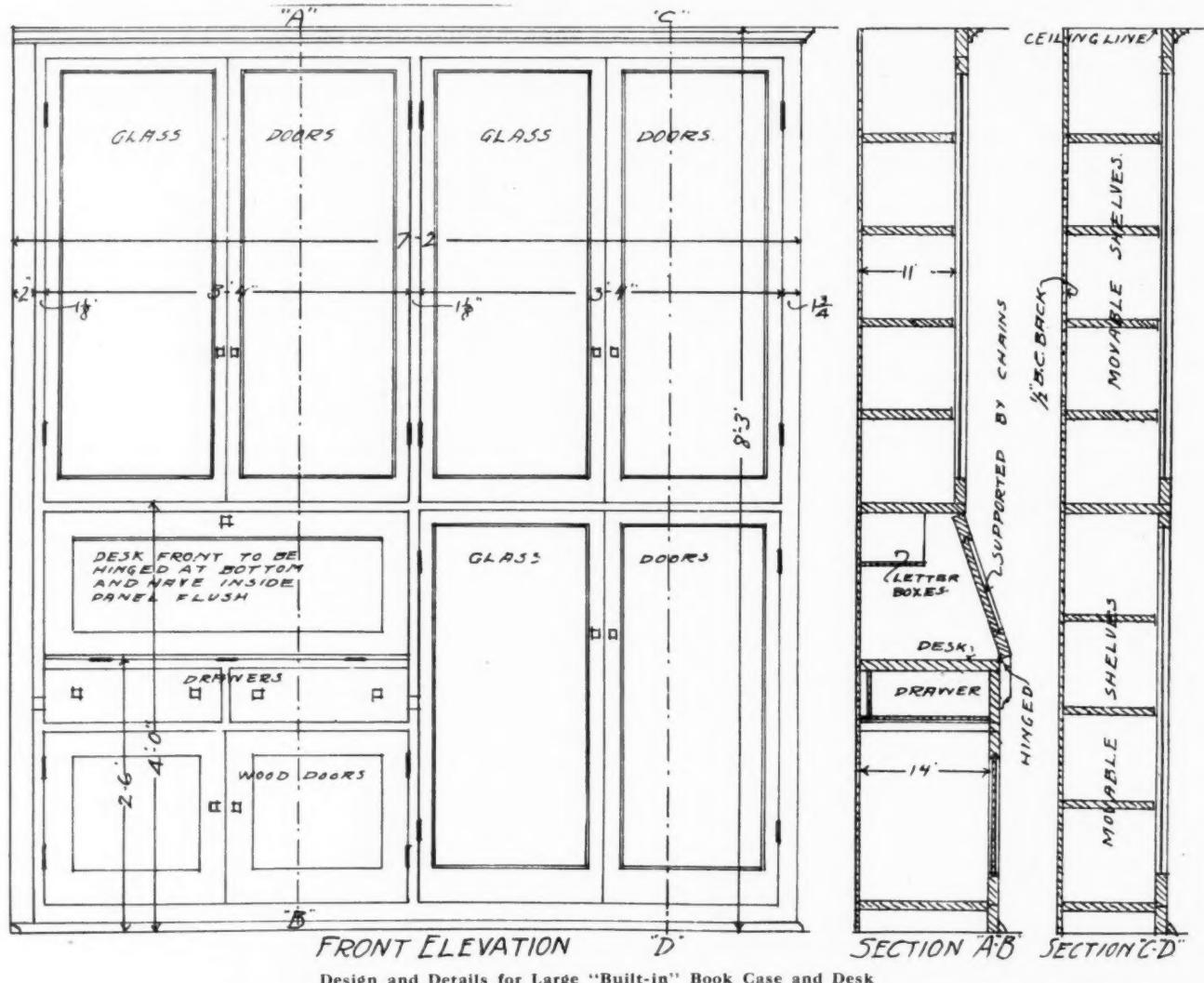
to be used as a study. It is in a frame house and the ceiling height is 8 feet 3 inches. I will be very much pleased if you will publish a sketch showing a good arrangement for a combined book-case and writing desk to go in this room. We want something that is handy and artistic in design, with the book-case extending clear to the ceiling, both over the desk and at one side. The book-case should have glass doors.

MORRIS A. WOLF.

Answer: The design illustrated in the accompanying sketch ought to do very well, both for your special case, and for any other room where a large combination book-case and writing desk is desired. The desk section consists of a

Trick of Putting Up Inside Trim." It is indeed as Mr. Stoddard has said concerning the fact that this branch of the work has been very much slighted. It is true we read considerable now and then on interior work; but as a general rule it is badly neglected in regard to the correct method to be employed in erecting it. The department of Details of Construction and Finish," conducted by this journal cannot be too highly recommended for the architect or mechanic who has designing to do but the man who must erect the finish is the one whose trouble we should endeavor to alleviate.

The erection of interior trim is not a difficult undertaking if a man will first thoroughly prepare to do a first-class job.



Design and Details for Large "Built-in" Book Case and Desk

hinged cover, supported by chains when let down, and serving as the writing board. Inside are pigeon holes for paper, envelopes, etc. Two drawers are provided below, also a fairly large compartment with swinging wood doors, which could be supplied with shelves or left clear, as desired.

The book-case is in three sections. The shelves should be movable so that they may be adjusted to suit the various heights of books. Small metal lugs may be obtained at the hardware store for the special purpose of supporting such movable shelves.

EDITOR.

He must first impress himself with the fact that he is not finishing a barn or a plain factory building, but that he is putting in place a piece of work that will speak for his neatness, carefulness, and mechanical ability possibly for years to come. No part of the building, especially in residence work, is more carefully scrutinized, or in fact adds more to the general appearance than does a neat, smoothly finished interior.

A foreman will find his carpenters, the ones who are not considered good finishers, divided into two distinct classes; namely, the ones who have not confidence enough in themselves to undertake this kind of a job, and the ones who are over confident and blunder away at the work in a manner which makes it altogether impossible for them to do acceptable work.

But both of these classes are susceptible to the many points

More Inside Finishers Needed

To the Editor:

Du Quoin, Ill.

In the January issue of the AMERICAN CARPENTER AND BUILDER, Mr. D. L. Stoddard has an article entitled "The

and corrections that the foreman will make; provided of course that he has the time at his command to spend teaching men things that possibly they should have known years before. Yet it will be found that some men from either class, after having important points shown them, will make excellent interior finishers, and the foreman will consider the time spent instructing them as an investment paying a good percentage.

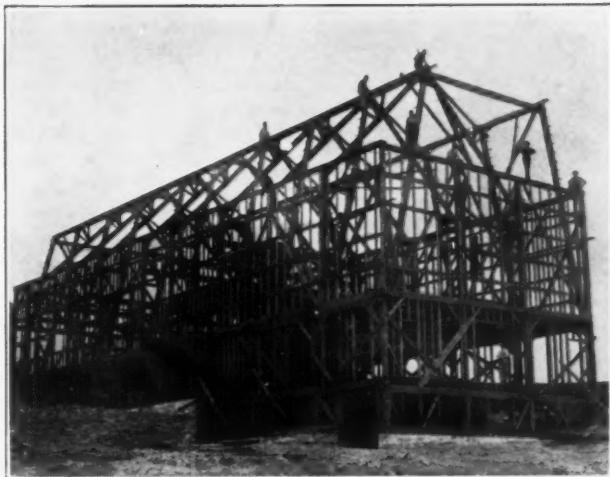
The fact that a great many carpenters are not good finishers is not altogether their fault. Several things combine to prevent many men from having the chance to try their hand at jobs requiring neat workmanship. In a great many places some contractors and a great many of the large construction companies have a finishing gang who do all the interior trim and cabinet work. If a man is not already a finisher he finds it sometimes difficult to obtain work with this gang. If a man belongs to the outside gang he has no chance at interior finishing. Nevertheless the man who is determined to be a good, all-around mechanic is the one who, in the end, will succeed as an interior erector as well as at other branches of the trade. Almost everything gives way before the determined man.

Never in the history of our country has there been a time when as much was required of our interior workmen in the way of neatness and exact mechanical ability as at the present. To cope with the most intricate problems that the architect now designs for interiors a carpenter cannot be a novice or a saw and hatchet man of possibly many trades.

Some may put up the plea that the average carpenter does not have to contend with, or in any way come in contact with, the fine jobs of interior work. That contention is entirely true. But how many carpenters with any sense of pride or the ones who care for the reputation they may make want to fall down on a nice job if asked to take plans and carry out the architect's designs. We all know the answer—Not one.

No man can become a mechanic or even a "half mechanic" without serving a time at practical work along the line in which he hopes to become proficient. Yet I never knew a man, with even a small amount of mechanical ability, who could not better himself by proper study or by pursuing a course of reading along the proper lines.

It may not do the man in California any good to know how a man in New York performs a certain piece of work; and yet on the other hand it may be just the thing he has been



View of "Shawver" Plank Frame Barn

looking for. An exchange of ideas among different men as well as between different sections of the country is almost a blessing to the man who has a difficult task to perform and wants to know how others would proceed with the same undertaking.

I want to say to the mechanic who tries and makes almost a complete failure, don't give up and say it is not in you; but rather use each failure as a stepping stone to a better and more complete piece of workmanship the next time an opportunity comes your way. Discouragement makes more poor workmen than do all the failures. HARRY EATON.



"Shawver" Plank Frame Barn

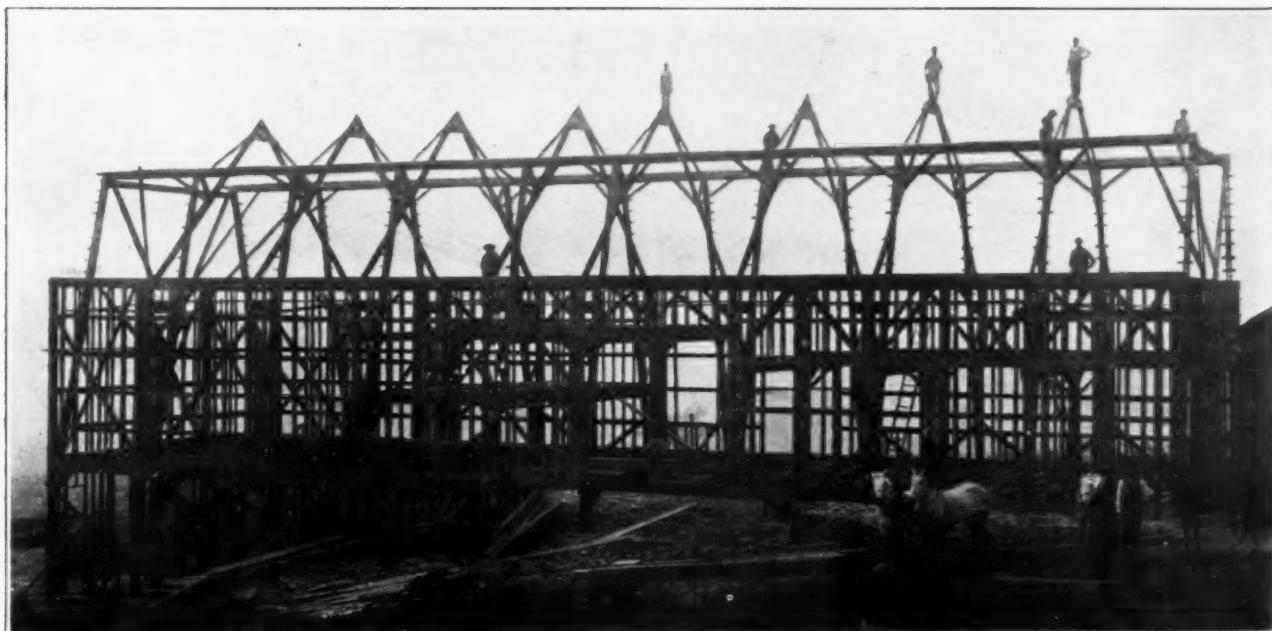
To the Editor:

Cole Camp, Mo.

Enclosed you will find two views of a barn I built some time ago for Slone Brothers, White Lake, Sullivan county, N. Y. Would like to see it in the AMERICAN CARPENTER AND BUILDER, as I have not seen any as large as this in your paper.

The first basement is 40 by 60 feet, 8 feet high; second basement is 40 by 120 feet, 10 feet high. The outside posts are 20 feet high, with gambrel roof. It is of the special plank frame system of J. L. Shawver of Bellefontaine, Ohio.

D. B. SHAWVER.



Large Plank Frame Barn Built at White Lake, N. Y., by D. B. Shawver.

A Nebraska Bungalow

To the Editor:

Beaver Crossing, Neb.

I send you photo and floor plans of a house I have just finished for Chas. Simniton of Beaver Crossing, which is of the bungalow style. It contains seven rooms and is finished



Seven-Room Bungalow Built for \$1,445

throughout with yellow pine, stained walnut, and varnished two coats. The cost of their home complete, was \$1,445.

HENRY CAIN.

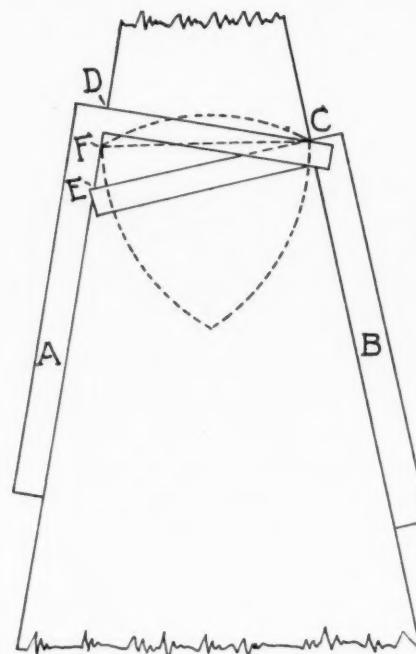
To Square a Tapering Timber

To the Editor:

Beaver Crossing, Nebr.

I am sending you a drawing of how to square a tapering piece of timber with the steel square, as follows:

Place the square, as shown at A, and mark across the timber on the outside of the tongue. Then place the square,



Squaring the End of a Tapering Timber

as at B, with outside of tongue intersecting first line, as at C, and mark across as before. Bisect the distance D E at F and draw a line to C. Now set the bevel square to this line and the timber can be squared all around. I believe this solution will be helpful to some of the readers of the AMERICAN CARPENTER AND BUILDER, who will have occasion to use it.

W. L. LATIMER.

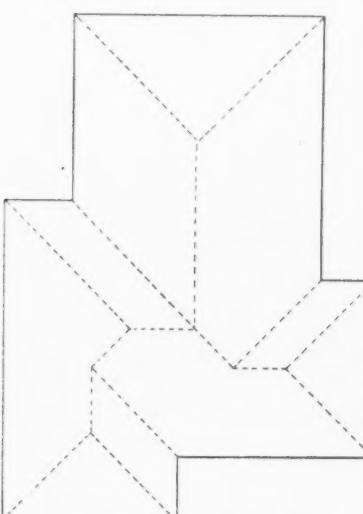
Roof Plan

To the Editor:

Plantsville, Conn.

I would like to submit to you this roof outline for information. Would like to see it in the May or June number, if possible.

This is an outline of a tin roof building of different heights.



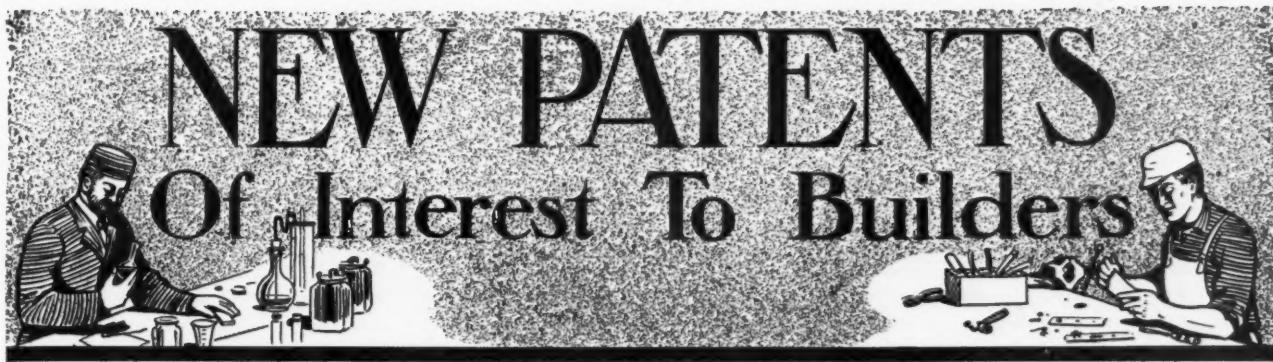
Roof Plan—and a Suggestion

I would like to make a shingle roof with a pitch of about 10 inches rise to one foot run.

ANTHONY A. BOYCE.

Answer: About the best that can be done with a roof of this kind is to hip it in from all sides, running the roof up to a ridge, as shown by the dotted lines, which we have added to Mr. Boyce's diagram.

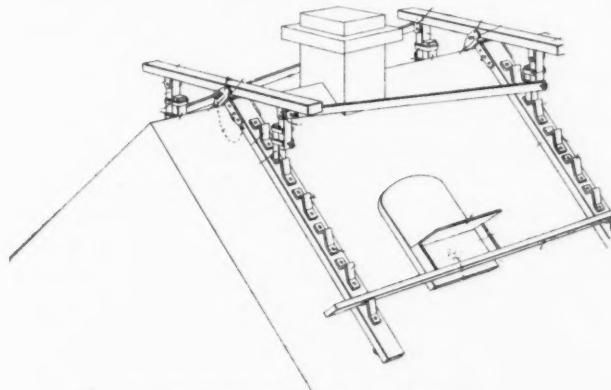
EDITOR.



CONDUCTED BY WATSON & BOYDEN, PATENT LAWYERS AND SOLICITORS, WASHINGTON, D. C.

Roof Scaffold

988,808—Patented Apr. 4, 1911, by Frank E. Parris, of Urbana, Illinois.



New Scaffolding Device for Roof Workers

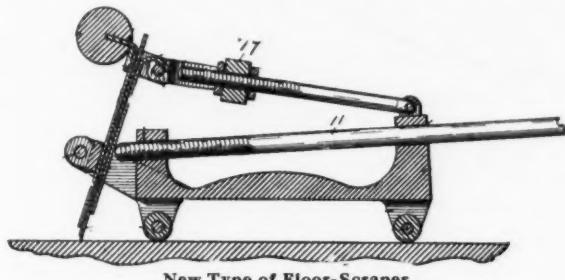
This invention relates to roof scaffolds for the use of carpenters, brick layers, shinglers or other workmen. The illustration shows a perspective view of the scaffolding; and the construction will be apparent from an inspection of the illustration.

A New Floor-Scraper

987,706—Patented Mar. 28, 1911, by Samuel Drew, of Rochester, New York.

The illustration shows a longitudinal section through the device.

This invention relates to certain new and useful improvements in hand scrapers designed primarily for leveling and smoothing off floors. The device forming the subject-matter of the present invention, however, is applicable for other uses,



New Type of Floor-Scraper

such, for instance, as finishing the decks of boats or vessels, finishing hard wood floors when first laid, as in new buildings, smoothing old floors, as well as cabinet and other work where it is desired to smooth or scrape the material.

The present invention has for its objects among others to provide a simple, yet durable and efficient tool of this char-

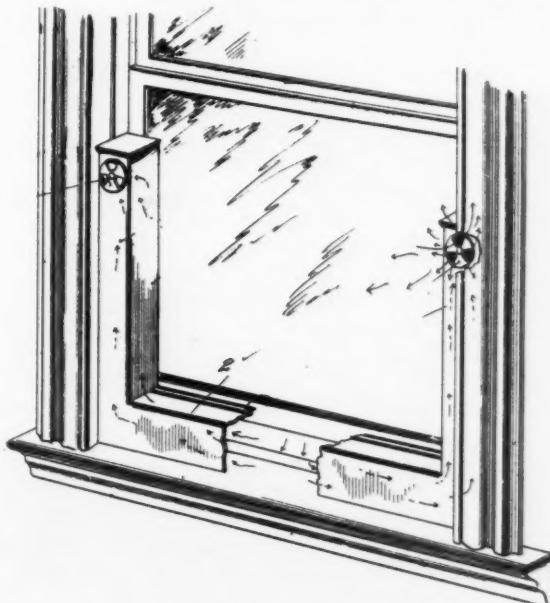
acter composed of few parts and having provision for quick and ready adjustment of the inclination of the scraping tool, as well as for its removal or adjustment for sharpening or filing when it becomes dull. Provision is made for mounting of the tool upon rollers, or upon a block of wood or the like when it may be so desired.

A handle is attached to the end of the rod (11) by which the device is to be pulled over the surface being cut while pressure is applied to the hand rest so as to make the blade cut. By turning the rod (11) the blade may be clamped or released; and it may be adjusted by turning the nut (17).

Window Ventilator

977,413—Patented Nov. 29, 1910, by Avery A. Matheson, of New York, N. Y.

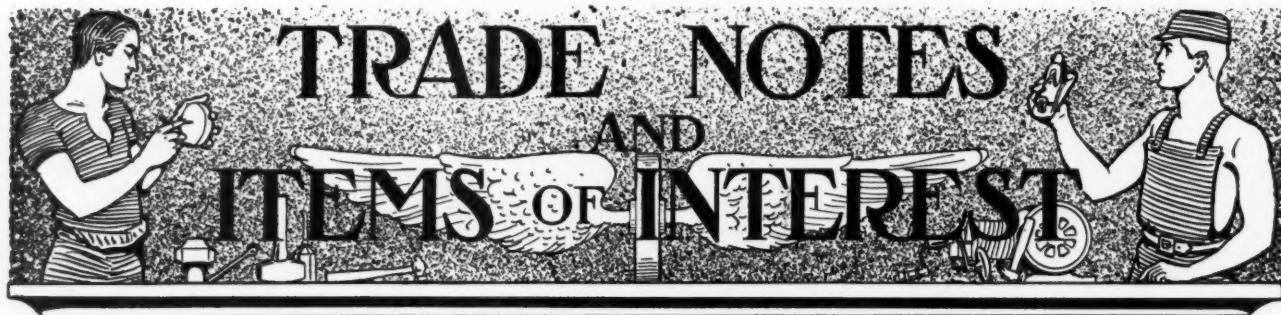
This invention relates to ventilators and the object of the invention is to provide a ventilator which is adapted to rest upon or be supported on the window sill of a window, said



Window Ventilating Device

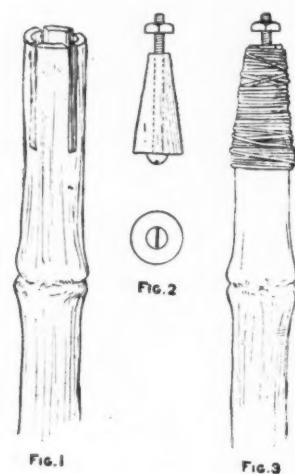
ventilator permitting the window sash to be opened so as to allow the inlet of fresh air but conducting the fresh air upward to any suitable point and allowing it to pass out through regulated openings, the ventilator permitting the entrance of fresh air without, however, any draft.

To this end there is provided a casing (2), resting upon the window sill and open on the outside so as to receive air when the window sash is raised as shown in the illustration. Vertically extending ducts project from each end of the casing and are provided at their upper ends with suitable draft regulators for delivering air into the room.



To Fasten a Bolt in End of a Bamboo Pole

A good way to fasten a bolt to a bamboo pole for use in aeroplane construction is shown in the sketch herewith.



Popular Mechanics in describing this says that the end of the pole is cut with a saw so as to form four or six pieces about $2\frac{1}{2}$ inches long (Fig. 1). A hardwood plug is made tapering (Fig. 2) and a hole bored through its center for the bolt. The bolt should fit tightly in the hole so that it will not slip back when the nut is removed. Slip the plug into the slotted end of the bamboo with the large end first and wind tightly with No. 18 wire (Fig. 3). This will draw the slotted end of the bamboo in closely about the tapering plug.

Wouldn't This "Stump" You!

The fir trees of the Pacific Northwest occasionally attain such proportions, especially in the territory near Puget Sound, that the stumps after the trees have been cut down are employed for novel purposes. In some portions of Washington one can see these huge stumps, which have been hollowed out and actually made into temporary homes for settlers, says *American Homes and Gardens*. To make a stump house, it is only necessary to remove the material from the interior, leaving enough to form walls of suitable thickness. Then a roof of boards or shingles is put over the top of the stump, holes are cut for windows and doors, and the dwelling is practically ready for occupation. A number of these stumps



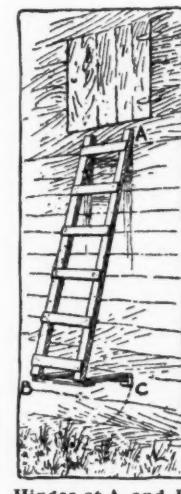
Shelters a Family of Five

have been used by settlers on logged-off lands, until larger and more convenient dwellings could be put up. After the stump home have been vacated, it is turned into a stable for the horses, or sometimes into an inclosure for chickens or hogs.

Next to the sequoia or "big trees" of California, the fir as found in Washington and Oregon has the largest diameter of any tree in America, and probably in the world. Some have been cut down which measured 15 feet in diameter. As the stump decays very rapidly after the tree has been cut the interior can usually be hollowed out with little difficulty.

Barn Ladder on Hinges

The illustration shows a ladder attached to a barn wall which is found convenient as it can be let down flat out of the way against the wall when not in use. The ladder is made of two pieces 2 by 4 with rungs nailed on the 4-inch side. A pair of 8-inch strap hinges are screwed to ladder at upper end and attached to wall at A. At the bottom there is a rectangular piece of board which is fastened to lowest step with 2-inch narrow butts at B. When ladder is to be used swing it out and set the brace against wall to hold ladder at the right angle to make it easy climbing. There is a small block nailed to wall at C to prevent the brace from slipping down.



The Force of Gravity How It Would Affect Man's Weight on the Celestial Bodies

If the planet Mars be really inhabited, the people who live there must be an exceedingly agile race. The average weight of a man is about 140 pounds, but the force of gravity on Mars is so much less than on the earth that the 140-pound man would weigh only fifty-three pounds if he were transported thither. With such light weight, and still retaining the same strength, an individual would be able to run with the speed of an express train, go skipping over ten-foot walls and do various other extraordinary things. On the moon a man would be even lighter.

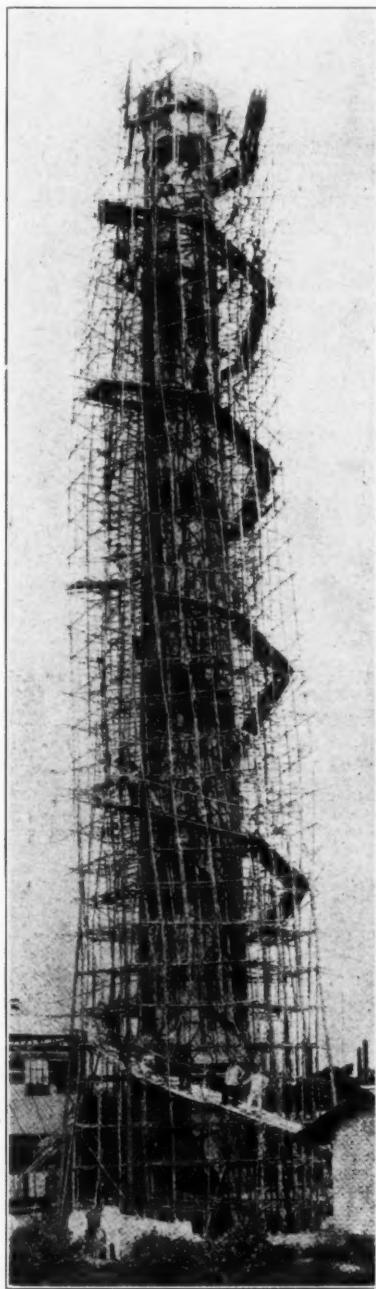
But on the sun our 140-pounder would have his troubles. Instead of being an airy individual he would weigh in the neighborhood of a ton and three-quarters. He would probably have the greatest difficulty in raising his hand, for that member would weigh about 300 pounds.

According to scientific computation, a man who on earth weighs 140 pounds would on the other celestial bodies weigh as follows:

The moon, 23 pounds; Mars, 53 pounds; Venus, 114 pounds; Mercury, 119 pounds; Neptune, 123 pounds; Uranus, 127 pounds; Saturn, 165 pounds; Jupiter, 371 pounds, and the sun, 3,871 pounds.

Scaffold Building in Singapore

The illustration herewith, is of a chimney recently erected at Singapore, in the Straits Settlements, to work in connection with a 50-ton capacity 4-cell refuse destructor of the well-known "Heenan" type. The photograph shows the mode of scaffolding construction adopted by Chinese and Malay workmen. It is an old-world method of scaffolding, and we assume in a country where labor is cheap and bamboos are



A Novelty in Scaffolding
Chimney for Singapore's New Refuse Destructor

plentiful, it is to be preferred to American methods.

The chimney is based on concrete foundations carried to a depth of 12 feet, and a 6 foot 6 inch internal diameter at the top. Owing to the heat of the gases leaving the boiler of the plant, the chimney has been lined with $4\frac{1}{2}$ -inch fire-brick to a height of 55 feet. The batter of the chimney is 1 in 40. The structure has been surmounted with a handsome coping 5 feet 6 inches in height.

The destructor is intended to deal with all the refuse of the city of Singapore, and it is described as being far and away the best so far erected in the Far East.

Lime Dust in the Eye

Workers in almost every department of the building trades are occasionally liable to get lime in some form in the eye, and the result is always severe pain and sometimes injury to the sight. A few days ago on one of the New York streets some hoodlums threw lime in the face of an old man. It got into his eyes, and as none of the bystanders knew what to do, the poor man lost the sight of both eyes. In such cases the victim or patient being temporarily blinded is unable to help himself and must depend upon those around him. The lime in this case was said to have been quick-lime, but this is undoubtedly a mistake. Quicklime is always in large hard lumps which cannot easily get into the eye, but when moistened it becomes intensely hot, and falls to a white and apparently dry powder, and it was this powder (slacked lime, or caustic lime) that caused the accident.

When lime, acid or any other corrosive gets into the eyes, the most effectual remedy is plenty of cold water. Lay the patient on his back, open the eyelids by using all the force that is necessary and pour plenty of water into the eye. In such cases the patient cannot open his eye; the lid shuts down spasmodically and must be opened and held open by someone else. Use all the force that is needed; better a disfigured eyelid than a blind eye. Do not dash the water violently against the eye, but pour it in a strong stream so as to wash everything out. And although quicklime and sulphuric acid (oil of vitriol) become very hot when mixed with a little water, this result does not follow when a large quantity of water is used.

Caustic lime is very corrosive. It removes hair, and for this reason is used by tanners. It destroys flesh and has, therefore, been selected as the substance in which the unclaimed bodies of criminals are buried, and when it comes in contact with any of the more delicate surfaces, such as the eye, the inside of the nostrils, mouth, etc., it is very rapid in its action, consequently there should be no delay in applying the proper remedy—plenty of cold water.

To Trap the Flies

Every garbage can and swill barrel can be converted into a fly trap, if the device invented by Dr. Clifton F. Hodge, of Clark University biological department, be adopted.

The can or barrel is fitted with a loose cover which permits the flies to enter. At the top of the cover is an opening leading to a wire-screen fly trap, and it is a peculiar fact that most of the flies entering the can in search of food will choose to make their exit at the top of the can and thus go to their death in the trap.

This method of killing flies before they get into the house is most effective and was devised after three years' experimentation. It is not patented and therefore may be used by everybody. Should it be generally adopted, it is probable that the annual fly scourge will be greatly diminished, and the health of the community correspondingly improved.—*Popular Mechanics*.



Fly Trap on Garbage Can Cover

To Manufacturers of Safety Appliances

All those manufacturing safety appliances for the protection of factory workers are urged to communicate at once with the Illinois Department of Factory Inspection, 1103 Security Building, Chicago. The Chief Factory Inspector, Edgar T. Davies, is now compiling a booklet listing all such appliances; and this is to be distributed to manufacturers in Illinois to aid them in complying with the requirements of the new law in that state.

Some time ago the state of Illinois passed a law making the use of safety appliances obligatory in all factories and workshops. Many manufacturers, though acquainted with the statute and desirous of complying with it, still lack definite information as to how and where to secure the safety appliances called for.

To supply this information and thus expedite compliance with the law, the Chief Factory Inspector is now compiling this list. It is stated that there will be absolutely no discrimination shown in this booklet, either in display, position or in any other way. Moreover this is entirely without charge or cost to any of the manufacturers represented. The expense is borne by the state.

If engaged in these lines, it will be worth your while to send this information at once.

"Utility" Crack Filler

The greatest objection to the use of wall board has always been due to the fact that so many builders do not like to have to panel the walls and ceiling in order to take care of the joints between the sheets of wall board.

The Heppes Company, of 4503 Fillmore St., Chicago, Illinois, have perfected an elastic filler known as Utility Crack

Filler, which, when used to fill the cracks between the sheets of Utility Wall Board, manufactured by the same concern, entirely eliminates this objection.

Utility Wall Board, having practically no contraction and expansion when applied to the walls and ceiling and the joints filled with Utility Crack Filler, make a smooth surface on which wall paper or burlap can be successfully applied.

The Heppes Company are known as one of the most up-to-date manufacturers in the country, and this recent improvement, together with other important features of Utility Wall Board, makes it one of the most popular building materials known to the contractors, builders and architects of this country.

If you have never seen a sample of this economical, durable, and artistic wall lining, it will pay you to write them for a sample to-day. It's worth your while.

Complete information concerning Utility Wall Board and Utility Crack Filler, may be obtained by addressing The Heppes Company, 4503 Fillmore Street, Chicago, Ill.

Too Hard?

The Disston people relate the following incident as showing how saws are often misunderstood and blamed wrongfully.

"One of our representatives, on a visit to the works at Philadelphia, brought a Disston hand saw with the report that the customer claimed it was so hard the teeth would not stand setting, and broke out. It seemingly bore evidence of hardness, judging by the number of teeth broken out.

"The saw was handed to our superintendent, who examined it, and, in order to give the representative a practical demonstration as to whether the blade was too hard or not, took him into the factory, placed the saw under the shear and cut

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of Store Fronts

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We believe we can, through our branch offices, be of service to you on any Store job you have. It makes no difference whether it is a new building or an alteration job—Kawneer is adaptable.

Our many offices are maintained for **you**—in order that our representatives may be on the job when necessary and to co-operate with you. You will find them well posted on Store Fronts and ready to lend a hand.

If you are not ready for Store Front material right now, let us give you our Booklet No. 2—it will tell you in a plain and concise manner about the Kawneer System and modern Store Fronts in general.

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Kawneer Manufacturing Co.

Factory and General Offices:

Branches in all
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2 x 14 14 equals $\frac{3}{4}$ feet to the Lineal Feet.

PCS.	FEET.	PCS.	FEET.	PCS.	FEET.
1	0 1/2	34	317 1/2	87	625 1/2
2	1 1/2	35	320 1/2	88	634 1/2
3	2 1/2	36	338	89	644
4	3 1/2	37	345 1/2	70	553 1/2

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New Plan Books—Just Out

The new Gordon-Van Tine Book of Plans, prepared at a cost of over \$5,000, is now ready for free distribution to carpenters and contractors. A complete and practical work that gives 32 designs for city, suburban and country residences, cottages and bungalows costing from \$600 to \$6,000. Also 12 plans for barn, dairy and cattle barns and other outbuildings. **This book keeps cost within original estimates**, for every plan has been proved again and again by actual construction.

The Plan Book will be mailed free on receipt of 10 cents in stamps or a dime to cover cost of packing and mailing.

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No. E 322—Colonial Built-up Column; Cypress, Plain Cap.

\$163

Dealer's Price, \$3.25

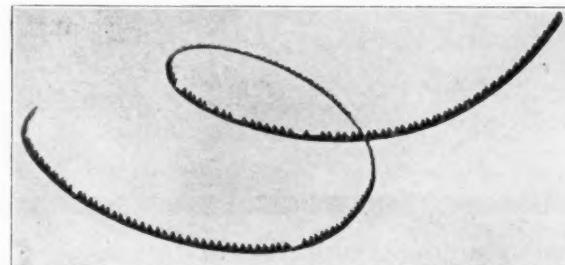
No. E 323—Colonial Built-up Column; Cypress, Fancy Cap.

\$222

Dealer's Price, \$4.75

off the tooth-edge as shown in the illustration herewith. Had the blade been too hard, the shearing would have caused the tooth-edge to crack or break in small pieces; but on the other hand, as will be noticed, the entire tooth-edge was cut off in one very narrow strip or coil, thus showing positively the blade was not too hard, for this is a very severe test of well-tempered steel.

"In making saws we claim that should a saw be too hard it would be discovered in the factory under our operation of



Tooth Edge Cut From Disston Band Saw

setting; and, further, if the teeth can be set by the method pursued at the factory, there is no reason why a mechanic cannot re-set them, when necessary, provided he does the work intelligently.

"To quote from our booklet—'We set our saws on a stake or anvil, with one or more blows of a light hammer. A highly tempered saw takes three or four blows, as it is apt to break by attempting to set it with only one blow. This is a severe test, and no tooth ought to break afterwards in setting, nor will it if the mechanic adopts the proper method. The saw that is easily set and filed is easily made dull. We have frequent complaints about hard saws, but they are not as hard

as we would make them if we dared; and we shall never be able to introduce a harder saw until the mechanic is educated to the correct method of setting it. As a rule saws are given more set than is necessary, and if proper attention was paid to keeping points of the teeth well sharpened, any Disston saw, on account of the special manner in which it is ground, would run with very little set, and there would be fewer broken ones. The principal point is that too many try to get part of the set out of the body of the plate, when the whole of the set should be on the point of the tooth. Setting below the root of the tooth distorts and strains the saw-plate. This may cause a full-tempered crucible steel blade to crack, and eventually break at this spot; but it is always an injury even if it does not crack or break.'

"To repeat, it is very desirable on the part of mechanics, who use saws, to have them of a high temper, and yet they fail to take proper care of a hard saw. A saw of this kind is apt to be worked until the teeth are worn down very low, and then instead of re-filing the teeth to the proper length and shape, they attempt to re-set these short teeth, with the consequence that breakage takes place, and the blade is condemned as being too hard.

"It cannot be too strongly emphasized, even though well known and understood, that no matter how well a tool may be made, nor how high the quality, it will render but poor service if not kept in good condition; further, a saw properly set and sharpened—in other words, maintained at its highest point of efficiency—means the obtaining of better and greater results in less time and with the least possible effort."

The Bessler Movable Stairway

Last month we published in this column a description of an ingenious building appliance, the Bessler movable stairway.

UNION METAL COLUMNS

Union Metal Columns follow the classic designs of ancient Greece and Rome. In the substitution of steel for wood not an atom of charm or beauty is lost—but a new element of value is added. Union Metal Columns are indestructible—used in Porch, or Pergola, they will outlast the structure in which they are incorporated. Specified by the most eminent architects and designers of America, these columns have earned an enviable répute even among those who deprecate the slightest departure from ancient forms. The catalogue which we will be glad to send you upon request, illustrates the artistic use to which Union Metal Columns have been applied in beautiful homes and buildings throughout the country. We have a special proposition for Builders and Carpenters. Write to-day.

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If you had made \$15

more on each frame house you built last year, how much more would your profits have been? If you built ten houses the savings would have been \$150.



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instead of old-style wood staging for scaffold, you can save that much this year and possibly more.

Isn't it worth saving?

We can prove our statement and will do so without expense to you. Will you try our Brackets? If you save money you will be glad you tried our plan. If you do not save, it will cost you nothing to make the trial. You will save during first year three to five times what the brackets cost and have them to use year after year. They never wear out.

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Patented in the United
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The "Multimotor" Shop Engine increases your profits and keeps down the size of your pay-roll. Does the work of three men at an expense of **less than a cent an hour**.

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Simplest, neatest, strongest, most reliable little engine ever built. Comes to you **complete**—nothing to add but gasoline.

Easily moved anywhere. For **indoor** use has **out-door** fuel tank, insuring perfect safety.

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Engine Book Sent Free!

Book, giving full information about "Multimotor" and Farm Pump Engine, sent **FREE** on request. Let us tell you more about these amazing little power-producers. Let us send you the name of the nearest dealer, who will show you the engine and **explain** what it can do.

(264)

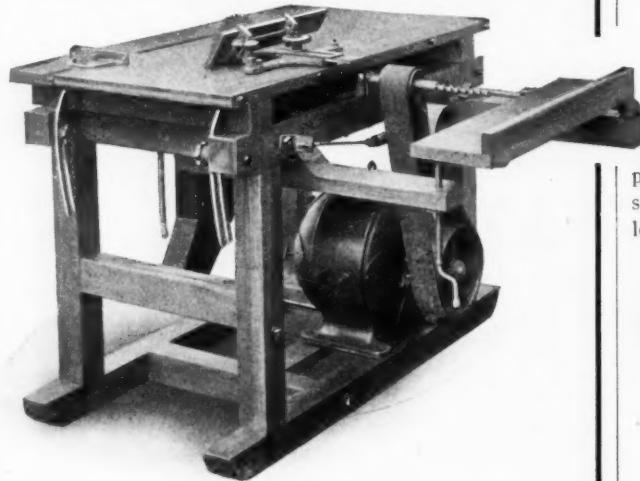
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Rip Saw	Cut-off Saw
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And all with self-contained power—either gasoline engine or electric motor, as ordered—ready for work at a moment's notice.

If you'll figure the time and labor this machine will save you, you'll understand how an "American" Portable Saw Bench will pay for itself on one job. After that, the money it saves you is clear profit.

Remember, this is no cheap machine—no make-shift—but a high-class tool built, like all "American" machines, to do the most work at the least cost and with the fewest possible repairs.

Write us for a complete descriptive folder.

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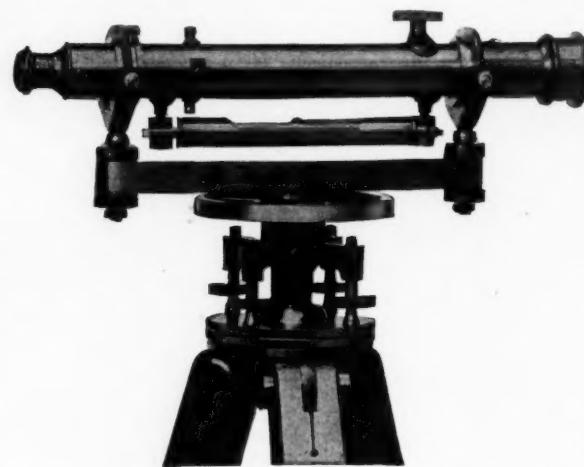
1655 Hudson Terminal
NEW YORK CITY
NEW YORK

We understand that several of our readers have gained a wrong impression of what this is, being led to believe that it is some sort of a folding contrivance. As illustrated last month, page 100, this is a movable stairway which slides halfway up and then swings over to a horizontal position on the level of the upper floor.

The Bessler Movable stairway does not fold but moves into a position where it does not occupy valuable space and yet is accessible at all times from either below or above. The Bessler Movable Stairway Company, Ravenna, Ohio, will be pleased to send their handsome descriptive folder containing full information to all who are interested.

Of Special Interest to Builders

The David White Company, Milwaukee, Wisconsin, manufacturers of surveying and engineering instruments, have perfected a high grade combination level and transit. This instrument is a saver both of time and labor, two items of importance to the builder, and is an instrument no builder or contractor can afford to be without. It can be used to plumb a wall, or line up girders, lay stakes, grade streets, square buildings, etc., and will practically do the work as a level and transit as well.



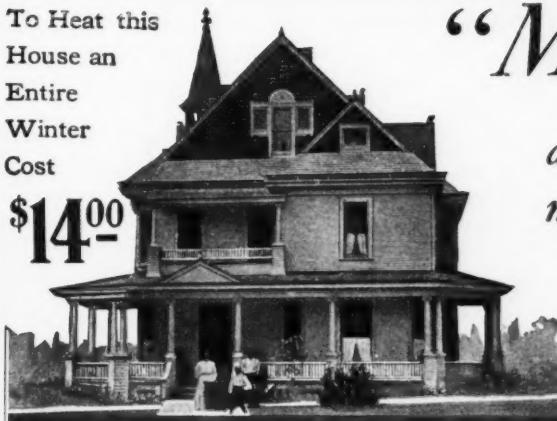
It is constructed the same as their improved architect's level, with a 12-inch telescope, adjusted in the same manner as the larger level. The lenses are of the best optical quality, magnifying power about 25 diameter, object glass 1 1/4 inches, and is provided with 4 leveling screws and clamp to spindle. The Y's have an improved locking arrangement dispensing with the pin bolts. It has also a horizontal circle 4 1/2 inches in diameter, fitted to the upper end of the socket and turning readily upon it; the circle is graduated from 0 to 90 each way, and has a vernier to read to 5 minutes, which is screwed to the flange of the center. The telescope is of good definition and is focused by rack and pinion. The eyepiece turns in a screw-like manner to enable precise focusing of the cross hairs. The tilting level, as an addition, is an attachment by which sights of 45 degrees above or below the horizontal can be taken. This attachment is a small set of standards screwed in to the center of the level bar; and when not in use can readily be removed, permitting the telescope to sit back in the Y's. The instrument is supplied complete with trivet, tripod, sun-shade, plumbbob, etc. Write for catalogue and special prices on these instruments.

Concrete Makes Model Farm

There are but very few who realize the enormous extent to which the concrete industry has grown within the past few years; and the extent to which it will develop in the future is entirely beyond intelligent comprehension. Building materials have always played an important part in history

To Heat this
House an
Entire
Winter
Cost

\$14.00



"My Underfeed

after eight years is just as good as new and has been in use thruout each winter season since it was installed."

THIS is what W. L. Williams, of Belknap, Ill., writes to us. It is just one illustration of the tremendous force of overwhelming endorsement which *helps sell* Underfeed heaters. Dealers who handle them are backed by much cheerful testimony of those who have *profited* by use of the sensible *smoke-consuming*, money-saving system. For years this economic truth has been proved

The Peck-Williamson Underfeed HEATING WARM AIR STEAM-HOT WATER SYSTEMS FURNACES-BOILERS

Save $\frac{1}{2}$ to $\frac{2}{3}$ of Coal Bills

Here's another **selling** point: Underfeed heaters, aside from the sure saving in coal bills, are a splendid investment, because they **add** to the renting and selling value of any building. This point is of interest to every architect and builder.

Coal in the Underfeed is fed from below. With all the fire on top, smoke and gases wasted in other heaters, must

— in the Underfeed—pass through the flames, are consumed and make more heat. **Cheapest** slack and pea and buckwheat sizes of hard and soft coal yield in the Underfeed as much heat as **highest** priced coal in other furnaces and boilers.

The big **difference** in coal cost is **saved** by the house renter or owner.

This illustration shows the Underfeed Boiler.



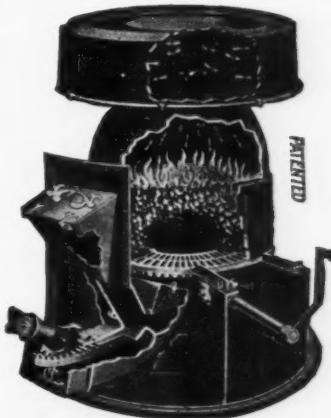
Just a Sample Letter of Appreciation.

Our representatives **everywhere** are successful Underfeed enthusiasts. They **KNOW** it pays to handle the line.

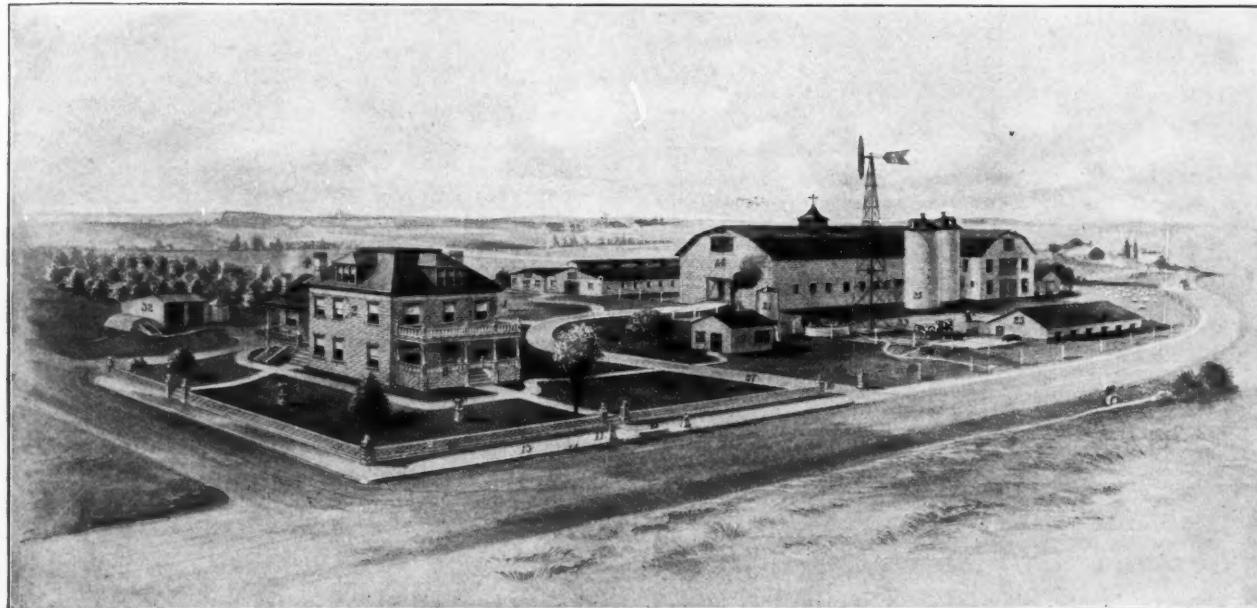
The North Denver (Colo.) Hardware and Heating Co. writes: "It is certainly a satisfaction to put in Underfeed Furnaces and have customers come in and sing their praises, with no word of fault to find. On Jan. 2nd—the coldest day we've had in 1911—with the temperature 15 to 20 degrees below zero, one party using a 'No. 731' in a 10-room house, pumped two hods of coal into his furnace in the morning, adjusted the drafts, left the house, returned at 11 P. M., and found the house at 70 degrees."

Heating Contractors, Dealers and Hardware Dealers are invited to write TODAY for our 1911 Sales Proposition. Underfeed Furnace or Boiler Catalog FREE. We give heating plans and services of our Engineering Corps FREE.

Illustration shows furnace without casing, cut away to show how coal is forced up under fire, which burns on top.



THE PECK-WILLIAMSON CO., 436 West Fifth Street, Cincinnati, Ohio



Model Farm Construction, Showing the Possibilities of Concrete Block and Brick Construction

All made on Northwestern Steel & Iron Works Machines.

1—Block Residence; 2—Window-Caps and Sills; 3—Cellar-Way; 4—Chimneys; 5—Porch Columns; 6—Porch Rails; 7—Porch Piers; 8—Porch Balusters; 9—Lawn Vase; 10—Corner Posts; 11—Hitching Posts; 12—Retaining Wall; 13—Sidewalks; 14—Curb; 15—Stepping Block; 16—Gate-Posts; 17—Fence-Posts; 18—Culvert; 19—Milk and Feed House; 20—Watering Tank; 21—Water Storage Tank; 22—Feeding Floor; 23—Hog House; 24—Corn Crib with Concrete Piers; 25—Silos; 26—Block Barn; 27—Driveways; 28—Brick Horse Stables; 29—Brick Sheep Sheds; 30—Smoke House; 31—Root Cellar; 32—Garage; 33—Foundation for Windmill; 34—Drainage Tile.

and the different periods have been known as the Stone Age, Iron Age, and now we are in the midst of the Concrete Age. The history of its growth furnishes a reading more interesting than any fiction as it has accomplished things more wonderful than the author of the Arabian Knights ever dreamed of. No other industry has developed to such large proportions in so short a time.

The picture gives a clear idea to what extent this material can be used. Residences, barns, stables, chicken houses, cisterns, cellars, drain tile, sewer tile, feeding floors, flower urns, hitching posts, fountains, lawn vases, flower boxes and jardinières, lawn seats and other similar articles; pergolas, balconies, lattices, sun dials and many other ornamental designs are now made of concrete.

Quality Is Economy

*Of course you want the Best
Finishing Job if it costs
no more than a makeshift*

Murphy Varnishes give you the best job at less than the makeshift cost.

They have Great Excess of Covering Power and Peculiar Ease of Working. You save on material and labor. You get a finish that you are proud of and that lasts.

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"What's the Right Varnish to Use?"

When your customer asks your advice about the *right* way to varnish the work you have done, you ought to be prepared to give the *right* advice.

You ought to *know*.

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That booklet and this label will make you a competent varnish adviser.

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For finishing floors in the most durable manner possible. Its quality has made it the best-known and most widely used of all varnishes. There is no substitute.



For the finest rubbed (dull) or polished finish on interior woodwork. It has for years been the standard to which all other varnish makers have worked.



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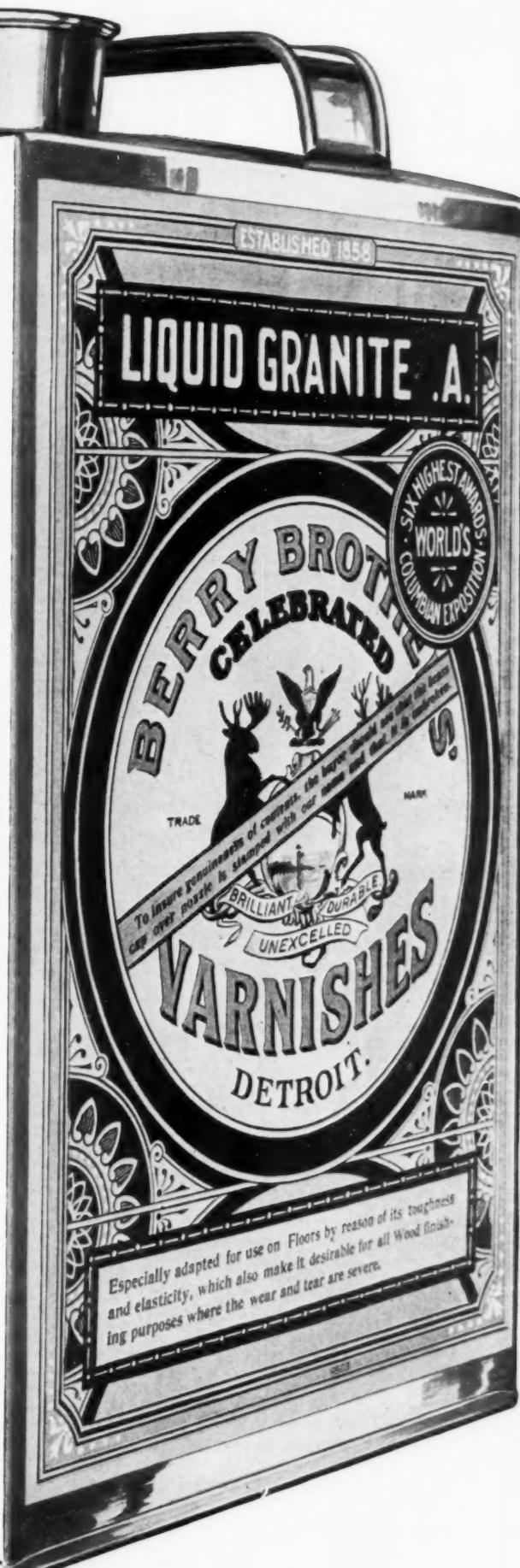
For front doors and all other surfaces exposed to the weather. Dries dust free in a short time and possesses great durability under the most trying weather conditions.

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We want to hear from every
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WRITE US TODAY!

We will admit that we have an axe to grind; we want you to be better posted upon "**JEWEL**" **Warm Air Furnaces**. No matter to which one of the three classes enumerated above you happen to fit into, it will pay you to know all you can about our line whether you intend to use it or not.



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That is why we invite you to write us. We have the facts—facts that you want to know—that will prove to you conclusively which is the best form of house heating. We do not ask you to take our statements without proof. We back up every claim by evidence from the world's best authorities. When you get through reading our book you will realize that you have struck a few new thoughts that go right to the heart of things and give you definite concrete information. You will be a better posted man because you have read this book, regardless of whether you are interested or not in

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You will quickly endorse the book as one of the most convincing and truthful advocates of the right kind of heating you have ever read. Will you let us send you a copy of this book by return mail? Just write your name and address on a postal, or use your business stationery and say:

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Detroit Stove Works

"Largest Stove Plant in the World."

Furnace Department

DETROIT

MICHIGAN

The Northwestern Steel and Iron Works in presenting this interesting view, has this to say to masons, contractors, carpenters and builders. "You cannot afford to ignore the vast importance of this building material now recommended by the most up-to-date and influential architects in the land. You cannot afford to be without concrete machinery—a mixer for your foundation, sidewalk and other work; a block machine for moulding your own material; a brick machine for chimneys and fireplaces; porch column and baluster outfit for porches and balconies; a sill and cap mould for steps, caps, lintels, etc., in fact anything that may be required in the building line and for making articles which you can sell in connection with your regular business. It will surprise you to learn how inexpensive such an outfit would be, and it will add wonderfully to your income."

They request every reader to send for a copy of their 1911 concrete machinery catalog. This contains the largest and most up-to-date line of concrete machines, moulds, parts, tools, etc., ever shown in any catalog. They make everything in the concrete machinery line from the cheapest moulds to the highest priced automatic machines, and they figure their prices at so much per pound.

Don't fail to get their 1911 concrete machinery catalog. Address the Northwestern Steel & Iron Works, Eau Claire, Wisconsin.

Planer, Matcher and Moulder

Cordesman, Meyer & Co., Cincinnati, O., have on the market a combined planer, matcher and moulder that is said to be giving great satisfaction in small planing mills and carpenter's and builder's shops. They claim that in ease of operation, simplicity and variety of adjustments and great range of work, their machine is without a peer. Almost all mouldings used in the construction of buildings can be successfully made on these machines and in addition, flooring, ceiling, siding, ship-lap, etc.

In three minutes this machine can be converted into a



Planer, Matcher and Moulder for Small Planing Mills and Carpenter Shops

24-inch surfer, for planing full width. The rapidity with which this machine can be changed from one class of work to another more than offsets any advantages that a larger and more expensive machine might have in the way of larger output.

The makers claim that these machines are perfectly adapted and absolutely guaranteed to do all of the above mentioned work in a first class manner on either hard or soft wood. In capable hands, the range of work that can be done is practically unlimited. Write to-day for catalog and prices, as sooner or later you will want one.

THE MARK of the MAKER on P. S. & W. CHISELS
is like the endorsement on the back of a note. It guarantees
excellence, because it stands for definite concrete facts.

It stands for a special quality of tool steel, tempered and hardened by a special process. It stands for longer and deeper sockets than other makes, accurately rounded to fit the handles. It stands not only for the most complete line on the market but for the one that is absolutely first in quality and finish.

A Large Line of Carpenters' Tools

Our Guaranteed Hand Tools for Carpenters include the SAMSON BRACE with Ball-bearing Chuck—known to mechanics everywhere as the "Big Chuck Brace."

Also, many other Braces, Auger Bits, Chisels, Gouges, Drawing Knives, Squares, Calipers, Hammers, Hatchets, etc. Look for the trade-mark on every tool you buy.

A Handy Book for All Tool Users

Write today for our "Mechanics Handy List." It contains many pages of valuable shop-information and a catalog of over 200 Tools for Carpenters, Machinists, Electricians and Tinsmiths.

The Peck, Stow & Wilcox Co.

MANUF'RS of the Largest Line of Mechanics' Hand Tools Offered by Any Maker

Address Correspondence, 22 Murray St., New York City
Established 1819 **Five Large Factories**



Trus-Con Slotted Insert

The new Trus-Con Slotted Insert presented herewith is a building specialty just put on the market by the Trussed Concrete Steel Company, Detroit, Mich., for use in concrete building construction.

This product is manufactured of the best grade of pressed steel, and is employed in concrete slabs, beams or columns for the attaching of shaft hangers, fixtures, sprinkler systems, pipe lines, etc. As the Trus-Con Insert is built into the concrete during the process of construction by merely fastening to the wood centering, the subsequent drilling of concrete is obviated. The concrete thoroughly imbeds the insert, holding it firmly in place, and only the narrow slot,



flush with the surface, is seen on completion of the work. The head of the bolt for attaching the shafting is slipped into the square opening and moved along the slot to its correct location, and as the slot is made in various lengths to meet requirements, a wide variation in position of the hanger is made possible.

Among other advantages presented by this Trus-Con Insert

over other types, may be noted its minimized thickness, allowing it to be used in thin slab construction, if desired; its neat construction with beveled edges and absence of sharp angles; its special washer which prevents the bolt from turning after being inserted in the slot, and the possibility of securing a continuous insert of any length by merely removing the end caps and abutting the inserts for that purpose.

Corrugated Sheets

The Jersey City Galvanizing Co., 107 John St., New York, wish to call the attention of contractors, carpenters and builders, to its pressed corrugated iron, suitable for siding, ceilings, doors, shutters, awnings, etc. This is made of black, painted and galvanized iron.

Corrugated iron is the strongest known form of sheet iron, and imparts material strength to the structure to which it is attached, by its lineal rigidity. It has the following qualities, essential to all covering material: It is fire, water and wind proof; it is cheap, light and durable; it allows for the use of a light frame, being a support in itself.

This firm manufactures pressed corrugated iron only. It is claimed that rolled corrugated iron cannot be depended upon, where accuracy, uniformity and economy are required. These corrugated sheets are made in three sizes of corrugation, three, two and one-half, and one and a quarter inches, which are those commonly used, more readily matched, and the sizes always carried in stock by contractors or merchants dealing in iron roofing supplies.

Standard stock lengths are 7, 8, 9 and 10 feet, but for other lengths, such as these will cut to without waste, or any length within the extreme of those named, and not requiring to be rolled especially, no extra is charged.

The Jersey Galvanizing Co. also manufacture bar, band



HOW THE MOTORCYCLE INCREASED ONE CONTRACTOR'S EFFICIENCY

NOT long ago a prominent contractor (name and address on request) said to us. "I simply couldn't get along without my 'Harley-Davidson.' I find I am able to gather data, estimates, etc., much more quickly than I could when using my automobile. I have to-day several large contracts in different parts of the city which I could not superintend profitably without my motorcycle. It brings me the nearest to being in two places at once of any means of transportation I know of."

How many times Mr. Contractor, have things gone wrong because you were not there? How many times the cost of a good motorcycle have you lost by such absence? You can be there and five miles away to see a prospect and back in 15 minutes.

How many times have you found yourself unable to make the personal calls you should have? How many times have you found yourself tired out from long walks or car rides before the day's work was scarcely begun?

A Harley-Davidson motorcycle will do the road work of five horses and permit you to do the work of two men with less labor than at present. It means hot lunches at home, pleasant evenings, no tiring walk and long car delays.

Let us tell you how a Harley-Davidson will increase your earning power. Send for booklet 185.

**HARLEY-DAVIDSON
MOTOR COMPANY**
704 L Street, MILWAUKEE, WIS.
"THE SILENT GRAY FELLOW"



Nicholls New Take-Down Square

Guaranteed Accurate and to Remain So

The main feature of OUR new TAKE-DOWN Square is that it will always stay true, it is so constructed that the tongue is held down into beveled bearings by a spring, and these bearings are made so as to take up the constant wear which comes in taking square apart and putting it together, thereby producing constant accuracy.

Every carpenter should know how to get the lengths of rafters, also their cuts.

**Our little book will tell you.
Send in coupon.**

Patent Applied For

Some of Its Good Points:

1. Convenient to carry.
2. Each time Square is taken apart and put together the wear produces a firmer joint, thereby insuring constant accuracy.
3. No screws used; locks automatically.
4. The only Take-Down Square which leaves no part of the Tongue attached to body when separated.
5. Occupies smaller space than any other Take-Down Square manufactured—2" x 24".
6. Instantly taken apart and put together.
7. Rust-proof canvas case with each Square.

Manufactured in Nos. 3 and 100 Standard; also No. 100 Rafter Framing containing the famous Nicholls' Rafter Framing Rule, a cut of end of square is here shown, at lower left hand corner. This rule gives length of Common, Hip, Valley and Jack Rafters for seventeen different pitches of roof; also their cuts.

If your dealer will not supply you we will ship you one of these, express prepaid, at the following prices:

	Polished	Br. Cop.	Nick. Plated
No. 3 Standard	2.50	2.75	3.00
No. 100 Standard	2.75	3.00	3.25
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Nicholls Mfg. Co.,

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FREE

One of our little books showing cut of square, also figures, and explaining how to use these figures to obtain the length of Common, Hip, Valley and Jack Rafters for seventeen different pitches of roof; also what figures to use on tongue and body of square to obtain their cuts. Every carpenter should have one of these books. Please send me one.

Ready-To-Lay

Burmite

Bird-Sand Surface

(Reg. U. S. Pat. Off.)

A FLEXIBLE-CEMENT-BURLAP INSERTED MATERIAL OF BEAUTY AND SERVICE

Mr. Architect, Engineer, Contractor, Builder or Roofer
BE FAIR TO YOUR CLIENTS AS WELL AS TO YOURSELF

by specifying, recommending and using THE CHEAPEST AND BEST MATERIAL ON THE MARKET, REGARDLESS OF PRICE

FOR ROOFING and SIDING

GUARANTEED FOR 10 YEARS Without Coating

Made with two Separate and Distinct Surfaces, i. e.,

BIRD-SAND
 and "*Twolayr*"
SLATE-CHIPS (PAT. PEND.)

Artistic and Attractive in Appearance—
 Durable and Inexpensive, Practical and Easily Applied with Superior Fire-Retardative and Storm-Resisting Qualities to meet Extreme Weather Conditions—Snow, Hail, Sleet, Sliding Ice, Rain, Sun, or the Extremes of COLD and HEAT do not affect the Superior Upper Coating of "Burmite"—proven The BEST by TEST.

For the "*Twolayr*" Slate-Surfaced Material, colored Slate of Unfading Quality is used, the fine slab-shaped Slate Chips being embedded into the pure Asphalt Composition so thoroughly—and put there to stay—that a smooth, even, upper Mineral Surface (there being two layers of Slate Chips) is the result, thus securing the well-known Imperviousness and Weather-Resisting qualities of Slate AT ONE-FOURTH THE COST.

Used in any Climate, can be applied in cold weather, and is equally well adapted to uneven, flat or steep surfaces; can be laid over old Shingles or Tin. Lasts longer than Shingles—costs less. Sold on its merits and lasting qualities. The First Cost—The Only Cost.

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The PIONEER PRESS OFFICE BUILDING, the finest Office Building in St. Paul, 18 stories high and covering nearly one-half block, Roofed with "BURMITE."

The building is described as the finest Office Building in St. Paul, 18 stories high and covering nearly one-half block, Roofed with "BURMITE."



The New St. Charles Hotel, the finest Hotel Building in South Dakota, if not the finest in the entire Northwest, costing \$250,000.00. ROOFED WITH "BURMITE".

Buy **Burmite** and be through with your "Roofing Troubles" for from 15 to 20 years.

To make yourself acquainted with this up-to-date Material for Roofing and Siding Residences, Business and Factory Buildings, Churches, School Houses, Summer Houses, Bungalows, Barns, Garages, Mills, Elevators, etc., of CONCRETE, BRICK, STONE, FRAME or other Construction—be they NEW or OLD, WRITE TODAY for our SAMPLES and BOOKLET, "BURMITE QUALITY COUNTS".

Illustrated with Buildings, beautifully Printed in Colors, showing effect of BURMITE MATERIAL applied as a Roofing and Siding. Mailed free of all charges and obligation.

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Also used as a
ROOFING SIDING
 Chipped-Slate Surface

and hoop iron, spelter, lead, tin, zinc, wrought iron pipe, sidings, galvanized riveted leaders, stove pipe, corrugated leaders and fittings, sheet metal lathing, sheet iron piping, fittings, tin plates, sheet copper, etc. These articles are all described and illustrated in this company's catalog. Readers of the AMERICAN CARPENTER AND BUILDER should send for a copy of this catalog and keep it for reference. Address the Jersey City Galvanizing Co., 107 John St., New York.

The Bovee Furnace

This illustration shows the construction of a Bovee furnace which, it is claimed by the manufacturers, heats a given space with less fuel than any other furnace.

This furnace starts with a clean heating surface at the ash-pit. It has a heavy cast iron firebox made in two sections surmounted by a combustion chamber 18 inches high and



Bovee Warm Air Furnace

almost one foot larger than the firepot. This large combustion chamber adds greatly to the heating capacity of the fuel, also to the durability of the furnace. It makes the furnace practically indestructible.

The Bovee furnace is also supplied with a special system of ventilating that takes the air from the air chamber inside of the casing and discharges it over the fuel, thoroughly mixing the air with the gases passing off the fuel and causing them to burn, thus securing a great deal of heat that is lost in other stoves and furnaces.

Above this large combustion chamber there is a return circulating radiator which carries the heat clear around with a sheet of flame between two sheets of cold air and a sheet of cold air between two sheets of flame, which secures the greatest possible amount of heat before reaching the chimney.

This furnace has several distinct advantages and anyone interested in furnace work should write the Bovee Grinder and Furnace Works, Waterloo, Iowa.



The Keenest Edge
in Shortest Time, on
Any Tool, With No
Danger of Draw-
ing Temper.

6 MONTHS



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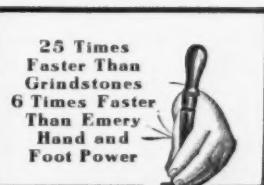
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1. Coarse Grinder
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We want every shop, factory, and tool-user to prove by 6 months' Free Trial, on your own tools, how this grinder saves

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time and money, makes work easier, saves and makes money. We will send this Mechanics Special on 6 months' Free Trial, and then, if you wish, send it back at our expense.



Luther Diamond Tool Grinder

Genuine Carborundum Wheels will not Draw Temper

The genuine Carborundum Wheels on this grinder cut hardest steel, as emery does soft copper, and does not draw temper—no water cooling necessary. You can do work in two minutes on this grinder that would take a half hour on the grindstone. With this grinder it is quick and easy work to keep tools bright and keen-edged, which means faster, easier general work.



BUILT LIKE A HIGH GRADE LATHE

Special tool holders make it possible for any one to do difficult grinding, such as twist drills, chisels, etc. 2500 revolutions per minute—steel and malleable construction, enclosed gears, dust proof, bronze bearings, machine cut spur gears run in oil bath.

WHAT USERS SAY

Thirty Times Faster than Grindstone

We have received your special tool grinder with foot-power attachment and sharpening outfit. We have tried your grinder and our machinist is very much pleased with it and tells us that he ground a chisel on this tool grinder in two minutes, which would have taken an hour of his time on any other grinder. —THE SEARS & NICHOLS CO., Pentwater, Mich.

ELMWOOD HAYNES, Pres. of Haynes Automobile Co., says: "I have found the Mechanics Special a most excellent device."

Thousands of users say the same.

RETURN THIS COUPON FOR SIX MONTHS' FREE TRIAL OFFER

Return this coupon for 6 months' Free Trial Offer—a whole half year of free test. Let us give you full description of the Mechanics Special—full particulars of our liberal offer, and also the wonderful story of the discovery of Carborundum, as it appeared in McClure's Magazine. Returning the coupon puts you under no obligations. It is well worth your while to find out all about the grinder guaranteed for 5 years—that will outlast any number of emery wheels—save tools and make work easier. Return the

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Please send me free and prepaid your Carborundum booklet and Six Months' Free Trial Offer on Mechanics Special Luther Diamond Tool Grinder. This obligates me in no way whatsoever.

Luther Grinder Mfg. Co.
56 Madison St., MILWAUKEE, WIS.

Novo Gasoline Engines

During the last few years there has been a growing demand for a gasoline engine that was small and light but still reliable, something that could be easily transported from one place to another without difficulty.

There are hundreds of ways an engine of this kind can be used around shops, homes or farms. There are very few farms or shops now-a-days that are not equipped with one of these useful small power plants. They are great savers of time and money.

A well-recommended engine of the above mentioned type is manufactured by The Hildreth Mfg. Co., Lansing, Mich. These people specialize in the manufacture of small horsepower engines (2½, 3½ and 5 H. P.) and are equipped to manufacture the best. Their engine, the Novo, has special features that are exclusive; it is proving very popular with purchasers.

Anyone considering buying a gasoline engine should write these people. They have issued a very interesting catalog, which they will be pleased to send to anyone on request. Address The Hildreth Mfg. Co., Lansing, Mich.

Pressure in the Block Business

We are informed that the Somers Bros., of Urbana, Ill., are meeting with much success in the sale of their Pressure block machine for making concrete blocks. Their machine makes blocks from wet concrete on the theory that better blocks can be made from wet concrete than from dry. Mr. Somers, the inventor, from his own experience with the tamp outfits, manufacturing from the semi-dry mixtures, was convinced that in order to make a better block it would be necessary to have wet concrete. To this end he experimented

and the result is the Pressure block machine. In the past the fault found with most block machines was the slowness with which the blocks were turned out. These people claim they have the fastest machine on the market.

There is no reason why anyone cannot make large profits in the block business now that this machine is perfected. In the past the loss, if any, has been because of a slow machine. With a fast machine, good materials and plenty of water, excellent results are assured. Anyone interested in this line of work will find it very much to their advantage to get in touch with Somers Bros., Urbana, Ill.

Used by the United States Government

The Sykes "Cup Lath," manufactured by the Sykes Metal Lath and Roofing Co., of Niles, Ohio, is fast becoming a necessity with architects, contractors and home owners who want the best results. This lath is self furring and easily applied; is uniform in width and length of sheet and according to the manufacturers, saves plaster over any other expanded metal lath. We understand that the United States Government has used this lath and has found it very satisfactory.

In use for ceilings the trough forms a partial vacuum and thus prevents the mortar from dropping off when wet. Each keyway has four retaining edges, two in the front and two in the rear, making practically one solid clinch every one-half inch.

The mortar does not hang on a sharp cutting or knife edge, thus cutting the clinches in side walls or ceiling, but rests on a beveled edge in each case; even where applied to sheathing a perfect key is secured without furring strips and the lath thoroughly imbedded in the mortar.

Quick Transportation of Tools *Light Finishings and Other Materials*

Carpenters, contractors, and builders can save time by using an International Commercial Car. You know from experience that you require some means for the quick, cheap transportation of hundreds of "little things" that otherwise cause delay. Our International Commercial Car is what you need. It works whenever you want it to, in all weather, over all roads.

International Commercial Cars



never "tire", never go "lame", never "eat" except when in actual use. They travel three times as far as a horse, at less cost, with heavier loads. They take up less barn space, are clean, simple, strong, and durable.

Write us for all the facts. You will be interested in what we have to tell you about International Commercial Cars.

**International Harvester Company of America
(Incorporated)**

70 Harvester Bldg.

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Here's Service for You



Runabout \$750 f.o.b. Detroit

including three oil lamps, tools and horn.
Gas lamps and tank, top, windshield, etc.,
extra. Detachable doors, \$25.

Hupmobile

GUARANTEED FOR LIFE

The Hupmobile mentioned below has been run 40,000 miles. It has passed through three different hands and is still running day in and day out, regardless of weather conditions.

P. L. CHERRY COMPANY, Inc.

BUILDING MATERIALS

310 Lumber Exchange Building

Portland, Ore.

January 14, 1911.

SMITH-CLEVELAND COMPANY,
Agents for the "Hupmobile".
Portland, Oregon.

Gentlemen:—

In response to your inquiry regarding Hupmobile No. 94, which I have, would say that the car gives most excellent service for the amount of money invested and spent on upkeep.

As you probably know, the car is now in its third year of existence. It was manufactured in 1908, shipped to San Francisco, and from there driven to Portland by Mr. Forest Smithson, on his famous honeymoon trip. Mr. Smithson used the car approximately one year, and in that time gave it the hardest kind of a test. Aside from the trip from San Francisco to Portland, it was driven to Tillamook three times, to Mount Hood, Seattle, and practically all over this state. After using it that year, Mr. Smithson sold the car to a gentleman here in Portland, from whom we purchased it five months later.

The HUPMOBILE is giving us great service, and we are using it every day, no matter what the weather. We figure that it has covered approximately 40,000 miles since it first came from the factory, and when it is considered that the car is now in its third year, was third hand when we bought it, and we are now getting steady use from it at extremely low cost, we consider it a mighty good investment.

Yours very truly,

H. E. CHERRY.

The above is typical of the undiminished service you may expect of a Hupmobile in constant use.

Records of our owners show from 25 to 27 miles to the gallon of gasoline in city work and it is not unusual to run 10,000 miles on a single set of tires.

Considering the saving of time and added service, the Hupmobile is an economy that Architects, Contractors and men whose business requires them to cover distances can not afford to overlook.

Hupp Motor Car Company

Dept. 32

Detroit, Mich.



SIMONDS

(Pronounced "SI-MONDS")

¶ The very first step taken toward making a Simonds Saw—the making of the steel—is specialized under a Simonds Process. By it we produce Simonds Special Crucible Steel—for Simonds Saws only.

¶ No other process produces a better steel for saws. It is tough, flexible, with a temper taking quality that makes it when treated, tempered, ground, finished and made into a saw blade, in the Simonds way, in the Simonds shops, the best saw that can be bought at any price.

¶ Another thing: should even the slightest defect crop up in a Simonds Saw, while in the process of making, that condemns it to the scrap heap. Remember you can always be sure of buying high grade quality when you buy a **Simonds**.

To buy the right saw, let it be rip, hand, or panel, see that the Simonds (Si-monds) name is on the BLADE

Let us send you a free copy of "Simonds Carpenter Guide" Tell us what kind of a saw you will need soon

Simonds Manufacturing Company
Fitchburg, Mass.

Chicago, Ill.
New Orleans, La.
Seattle, Wash.

New York City
San Francisco, Cal.
Lockport, N. Y.

Montreal, Que.
Portland, Ore.
London, Eng.

Three "Yankee" Tools

Readers of the AMERICAN CARPENTER AND BUILDER will be interested in three new "Yankee" tools, recently put onto the market by North Bros. Mfg. Co.

The "Yankee" quick return spiral ratchet screw driver, No. 130 is the same as the regular pattern No. 30 with a spring added in handle as shown in cut, which causes the handle to come back for the next push, in driving screws in or out.



Spiral Screw Driver with Quick Return

It is a "quick return" and more rapid as well as convenient in practical use, than pulling the handle back.

It has been in practical use in the factory of the manufacturers for many years, and especially appreciated by men who are driving screws most of the day, and in narrow, deep places where the left hand cannot be used to hold the chuck end of the driver. It can be successfully used with only one hand driving the tool, as the spring keeps bit in position as it forces the handle back for the next stroke.

The "Yankee" push brace No. 75 is so named because it will hold all the small tools used in a bit brace, but is operated by pushing the handle to revolve the tools, in same manner as a "Yankee" spiral ratchet screw driver. It excels a bit brace in its greater rapidity and convenience in the lighter work ordinarily done by the brace. It will, with little effort, bore $\frac{3}{16}$ holes in metal, drive $\frac{3}{8}$ -inch auger bit in hard



Push Brace

woods, or $\frac{1}{2}$ to $\frac{5}{8}$ bits in white pine. It will drill holes, drive screws in or out; can be used for tapping holes, and with socket bit drive in small lag screws, run burrs, or nuts, on bolts, etc. Not only will it do this more rapidly than a brace, but being straight and cylindrical and operated by pushing, it can reach into many places, in corners, holes back of obstructions where a brace cannot be operated.

The "Yankee" hand drill No. 1530, with right and left hand ratchet movement is a small size hand drill for light work, and embodies the same ratchet movements that have made the "Yankee" breast and hand drills so popular, and is built on same mechanical lines, that of a tool rather than a piece of hardware.

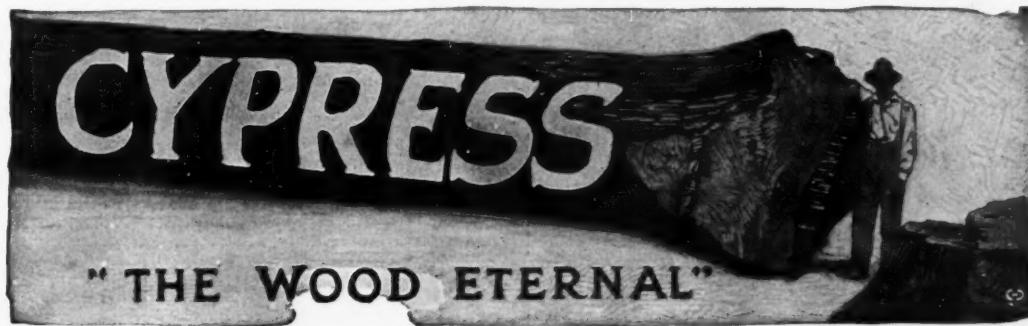


Hand Drill

The mechanism is simple for changing action of the tool, and is operated by merely moving the shifter on cylinder between the small gears on spindle. Note the little slide on cylinder between gears and the notches. With slide in first notch (at top), it is a plain drill, in second a left-hand ratchet, in third a right-hand ratchet, in fourth a double ratchet where any movement of crank forward or backward causes the drill to cut continuously, a time saver and convenience when working in corners where crank cannot be turned. In fifth (at bottom) gearing, etc., is locked to open or close chuck.

All mechanics should investigate the line of "Yankee" labor-saving tools. North Bros. Mfg. Co., Philadelphia, will send complete information on request.

"PUT A STOP TO DEPRECIATION—BUILD WITH CYPRESS AT FIRST!"



CYPRESS

broadest lines—with an educational purpose as *permanent* and *safe* as your investment in CYPRESS itself.

For the moment, (and as a guide of *real value* in your *Winter Plans for Spring Building*, or *Spring Improvements*, or the Repairs due to your not having known CYPRESS before) the vital CYPRESS FACTS may be condensed into 9 words:—

"CUT OUT REPAIR BILLS— BUILD OF CYPRESS AT FIRST!"

If "it" (whether palace, bungalow, "back-steps" or *pasture fence*) is *already built*

**MAKE YOUR NEXT REPAIRS WITH CYPRESS
and PUT A STOP TO DEPRECIATION**

SOME DIFFERENCE BETWEEN THESE HOUSES—(BOTH CYPRESS)

It took a cyclone to injure this.



Only a cyclone can wear this out.



In this house (of solid CYPRESS) in Sinepuxent, Md., the heroic Commodore Decatur was born, January 5, 1779. In 1884 a cyclone left it as photographed above—wrenched and half-denuded, BUT NOT DECAYED. CYPRESS is equal to an insurance policy against Ordinary Depreciation and Repairs.

This is a modern residence in Brooklyn, New York, roofed and sided with CYPRESS shingles throughout. CYPRESS shingles when weathered take on a beauty and substantial picturesqueness not approached by any other material. CYPRESS bevel-siding (clap-boarding) is equally enduring. "Cut Out Repair Bills."

**CYPRESS is indeed "the wood eternal."
He who uses Cypress builds but once.**

Why not FIND OUT what CYPRESS can do for YOU, NOW?

WRITE US—ASK YOUR OWN QUESTIONS—about big needs, or little ones. You can rely on detailed and reliable counsel if you address our "ALL-ROUND HELPS DEPARTMENT."

Southern Cypress Manufacturers' Association

1217 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

Probably your lumberman sells CYPRESS; if not, Write Us, and we will tell you the dealer handiest to you.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



On Which Side of the Desk Are You?

In every business there is a desk with two sides. The man on the one side thinks and makes money—the man on the other side works and draws "wages." On which side of the desk are **You**?

The man before the desk works with his **hands** and is paid for his **labor**. The man behind the desk works with his **head** and is paid for his **knowledge**. It is merely a question of "knowing how."

For 19 years the International Correspondence Schools, of Scranton, Pa., have been enabling people to advance in position and earn more money. Every month there are received at the I. C. S. over 400 voluntary letters telling of positions bettered and salaries increased through study of I. C. S. Courses. The writers of these letters are not men of genius—not the sort known as "gifted," "naturally bright," etc. They are plain men that have studied diligently the work of their choice. Spare-time study won their advancement.

If you want to raise **your** salary, mark and mail the attached coupon. Mailing the coupon will cost you nothing but postage, but will bring to you a full explanation of the I. C. S. salary-raising plan.

Mark and mail the coupon NOW.

International Correspondence Schools

Box 910, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position, trade, or profession before which I have marked **X**.

• Architect
Arch'l Draftsman
Contract Fg & Build.
Building Inspector
Structural Engineer
Structural Draftsman
Plum. & Heat. Con.
Supt. of Plumbing
Foreman Steam Fit.
Plumbing Inspector
Heat. & Vent. Eng.

• Estimating Clerk
Civil Engineer
Surveying
Mining Engineering
Mechanical Engineer
Mechanical Drafts.
Stationary Engineer
Electrical Engineer
Electric Lighting
Electric Railways
Concrete Construct'n

• Automobile Running
Foreman Machinist
Sh.-Met. Pat. Drafts.
Textile Manufact'g
Bookkeeper
Stenographer
Advertising Man
Window Trimming
Commerci'l Illustrat'g
Civil Service Exams.
Chemist

• Name _____

• Street and No. _____

• City _____ State _____

New Builders' Hardware Catalog

The Rehm Hardware Company, 1501 Blue Island Ave., Chicago, have just issued a new catalog, No. 5, with net price list, which should be in the hands of every wide-awake and up-to-date contractor and builder. Why be content to use old-style hardware on your new buildings when you can secure the latest designs and finishes at the same prices? This catalog fully describes the different styles and finishes of lock sets as well as the trim hardware, so that a person can select all the hardware needed for a building and have all finish match.

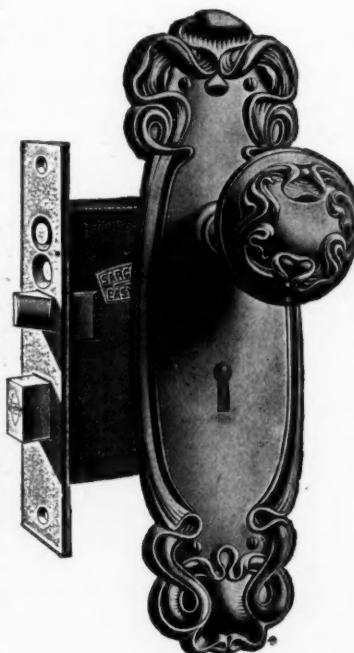
The catalogs which the Rehm Hardware Company began printing years ago have been steadily increased in size, until now they are able to give away, without any charge whatever, a book so full of illustrations of high-class builders' hardware, that it gives the contractor specifying and estimating from it, an extraordinary advantage over the man who is not lucky enough to have one.

Their 1911 catalog is just off the press and ready for distribution. In it is illustrated everything needed to complete houses with the latest and most up-to-date hardware. It contains a fine assortment of cylinder front door sets and handles in all of the leading finishes; cylinder and regular store door docks and handles, ranging in prices from the cheapest to the most expensive. Sargent's Union lock sets, cylinder and bit key door sets in cast bronze metal, wrought bronze metal and steel-plated finishes. Also inside lock sets, consisting of all the leading and up-to-date designs for bungalows or office buildings. Glass knobs, door knockers, nickel-plated and *Bower Barf* sets, sash locks in all finishes. Sash lifts, casement fasteners and adjusters, door holders, flush and chain bolts, butts and a big assortment of double acting spring hinges, screen hardware, sliding door and barn door hangers, galvanized gutter, ridge roll, finials and tools.

The Rehm Hardware Company have been advertising in every issue of the AMERICAN CARPENTER AND BUILDER for the past five years and have among its subscribers many men who appreciate the advantages of an easily understood catalog which enables them to make selections from the latest designs and standard makes and at wholesale prices.

If you have not received one of these new catalogs, it is surely worth while to write for one. In estimating on the different designs and makes, the Rehm Hardware Company never deceive the buyer in giving prices on coated ware, when solid copper or bronze is wanted.

In the first place, they tell the prospective buyer exactly how to tell the difference between the coated and solid materials, and thus the buyer is always assured of getting figures based on just what the article is; later on, when ordering, he receives exactly what he pays for. This means a great deal to the contractor and builder and to the property



Climax Wood Mortar

(*Wood Fiber Plaster*)

A practical, fireproof plastering material. Easily applied.

The Modern Wall Plaster

Ordinary plaster made of lime and sand is a constant source of expense for repairs. Every time a nail is driven a large, ugly hole is left through which the sand trickles, increasing in size with every vibration. There also is imminent danger of the plaster falling because of accidental flooding caused by leaky roof or broken waterpipes.

If you would practice true economy have your walls and ceilings plastered with **Climax Wood Mortar**.



Then your walls will be permanent—they will never need repairs. Your house will be warmer in winter and cooler in summer. You can decorate without fear of the decorations being damaged by pops, cracks or crumbles.

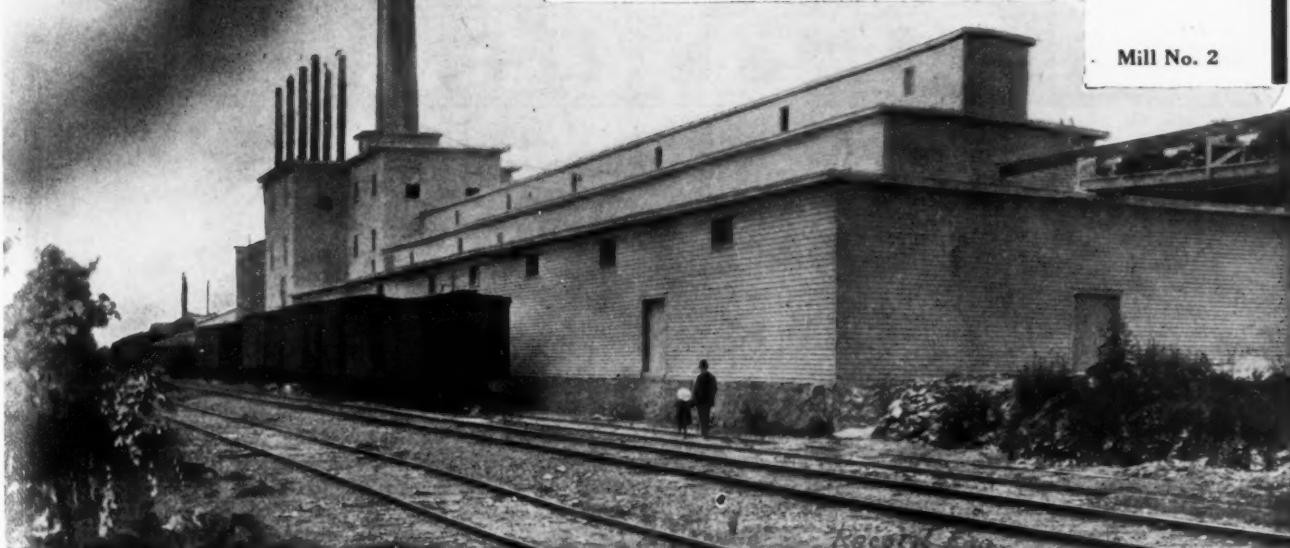
The base of Climax Wood Mortar is **Pure Gypsum Rock** (absolutely fireproof) mixed with finely fibered, tough wood and such other ingredients as are necessary to make it plastic, easy spreading and a reliable wall plaster. It is the result of more than fifty years' experience in manufacturing wall plasters and we especially recommend it for ceilings, arches and domes where the plaster must be self-supporting. Climax Wood Mortar is very adhesive and its permanency may be relied upon. It resists fire, is very strong, light in weight, and the cost is about the same as for ordinary lime and sand plaster. If you want the best insist upon Climax Wood Mortar.

Sold by All Dealers in Building Materials

GRAND RAPIDS PLASTER COMPANY
GRAND RAPIDS, MICHIGAN

Three Large Mills at Grand Rapids and
Grandville, Michigan

Mill No. 2



owner; and by thus dealing honestly and fairly with all their customers, the Rehm people have gained for themselves the confidence of their customers. The new catalog is worth having, even if you happen to have an old one on file.

We wish to call your attention to the cut of the front door set. You will notice that the dead bolt as well as the latch bolt is operated with one key. All the front door lock sets with one keyhole, illustrated in this catalog, are operated in this way.

Useful Booklet on Paints

It is not surprising to us to learn that the Alcolac Manufacturing Co., of Long Island City, are meeting with the big success they are in the sale of their line of enamels, varnishes, paints and bronze powders, as they have a very fine line of these goods and sell them at a very reasonable price.

Their Alcolac enamel is a fine interior enamel and in elasticity, hardness and smoothness, is said to rank with the best. It may be used on wood, iron, tin, stone, etc. Such as wainscoting, doors, shelving, walls or for all kinds of wood, wicker or iron furniture and for all kinds of high-class interior decoration. It can be washed when soiled.

Their varnish stains are manufactured from the best products obtainable and are especially adapted for use on floors, doors, refinishing furniture, picture frames, mantels, etc. It stains and varnishes in one application and is a great reviver of wood work. It is washable with soap, hot or cold water, and can be applied by the most inexperienced person.

This concern have put none of their goods on the market without thoroughly testing them and trying them out. The result is that all goods sold under the trade mark of "Alcolac" are of reliable quality, and will give the dealer or consumer very good results. They have built up a very nice

business along the lines of quality and are very proud of their goods.

With their manufacturing facilities they can afford to make a very fine paint at a reasonable cost and it is said that they do this.

They have recently gotten up a very useful booklet on the uses of paints, varnishes, etc., which they will be pleased to send to readers of the AMERICAN CARPENTER AND BUILDER who write for it.

If you are in the market for any of the goods manufactured by these people, we would suggest you drop them a line and get their book and quotations. Address, Alcolac Mfg. Co., Long Island City, N. Y.

Buy Good Tools and Care for Them Properly

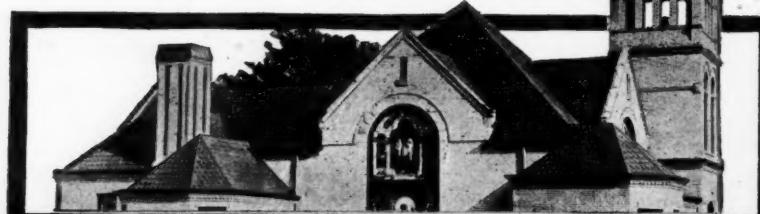
It is a very rare occasion when any man can look over his workshop, examine all his tools and find every one in perfect condition. He is almost sure to find an edge turned here, a handle loose there, a nicked chisel or a dull hatchet. This may be the fault of the tools themselves, or it may be the manner in which they are kept.

Of course, every workman appreciates the economy of getting the very best tools he can buy, and selects his tools to the very best of his ability.

But, after all, tool buying is rather risky, even to an expert. It was to remove this risk that the Simmons Hardware Company introduced the famous Keen Kutter line of tools and cutlery. This name means perfection in quality and temper on whatever article it is stamped, whether it be a can-opener or a cross-cut saw.

The manufacturer assumes all the risk himself by guaranteeing all Keen Kutter tools and cutlery to stand every test

FOR ALL PURPOSES



CORTRIGHT

Metal Shingles

What Appeals to Carpenters and Builders about Cortright Metal Shingles is the fact that they have all the advantages of other forms of roofing combined; so that they do not have to adopt a special kind of roofing, and employ a special kind of labor for each different job.

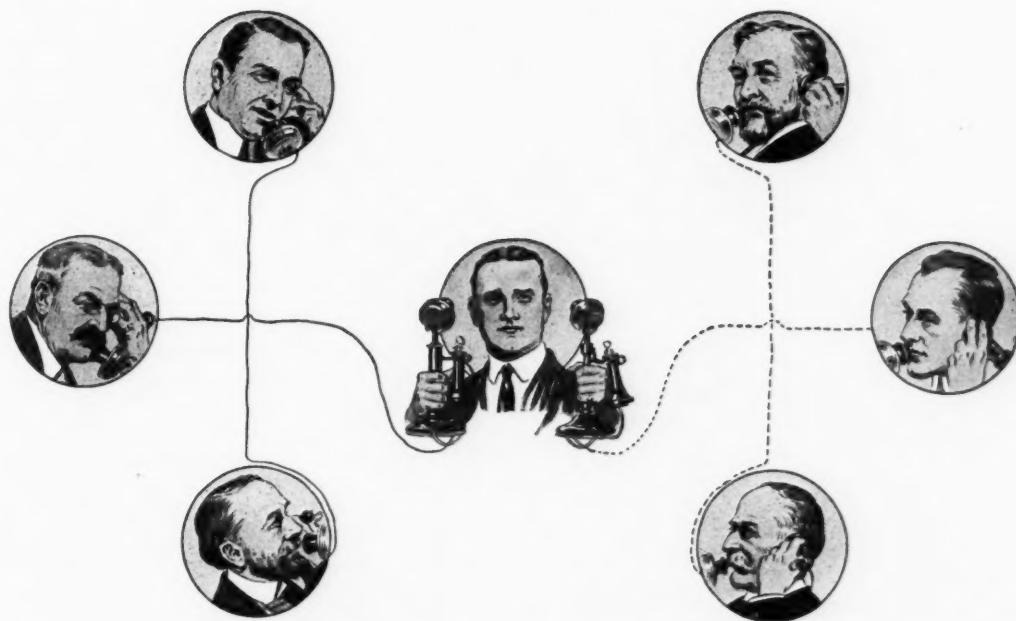
Cortrights they can use for any style building, and can be laid by their own men, eliminating trouble and expense of employing special skilled workmen.

And best of all—besides these advantages he is able to overcome with them any kind of roof competition, for **Cortrights** are Fireproof, Stormproof and will outlast the building without needing repairs, and at the same time afford a far more handsome roof.

All these facts are illustrated and described in our catalog "Concerning That Roof." It also shows how **Cortrights** actually look on all kinds of buildings.

Write us for our proposition.

Cortright Metal Roofing Company
PHILADELPHIA and CHICAGO



Half Service Or Double Expense

TWO telephone systems in one town mean a divided community or a forced duplication of apparatus and expense.

Some of the people are connected with one system, some are connected with the other system; and each group receives partial service.

Only those receive full service who subscribe for the telephones of both systems.

Neither system can fully meet the needs of the public, any more than a single system could meet the needs of the public if cut in two and half the telephones discontinued.

What is true of a single community is true of the country at large.

The Bell System is established on the principle of one system and one policy, to meet the demands for universal service, a whole service for all the people.



**AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES**

of actual use. If any defect should develop, or if the tools should prove unsatisfactory, the dealers are instructed to refund the money, and the manufacturer stands the loss.

In order to give such a broad guarantee as this it was necessary to include only the very best tools under this name. They are all put to more severe tests at the factory than they would ever be called upon to pass in ordinary everyday work.

It is easier, therefore, to make sure that your workshop is equipped with tools of highest quality by always purchasing them by the name Keen Kutter.

These people claim that the ideal way to equip your workshop with Keen Kutter tools is to buy one of the Keen Kutter tool cabinets. Such perfect tools deserve good treatment. In the Keen Kutter tool cabinets the tools are hung each in a place of its own, where they cannot come in contact with each other, and where each tool is in plain sight, and can be taken out without injuring any of the others.

These cabinets are of various sizes, containing small and large assortments, according to your needs. The largest contains one hundred and fifteen tools, which is a complete outfit suitable for carpenter or cabinet-maker, including a work bench and vises.

These are the only tool cabinets made containing a complete set of tools under one name, trade mark and guarantee. Most hardware dealers have these cabinets in stock, and any who do not will be glad to order one for you.

Collapsing Ceilings Caused by Vibration

When the Pennsylvania Railroad tunnels between Manhattan and New Jersey and between Manhattan and Long Island were completed recently, real estate men, building managers, contractors, owners, and prospective builders were furnished

with a lesson in vibration of buildings.

The lesson had to do with the prevention and cure for the falling of ceilings. The Pennsylvania Railroad Company solved the problem and probably saved many New York owners thousands of dollars by building vibration proof tunnels.

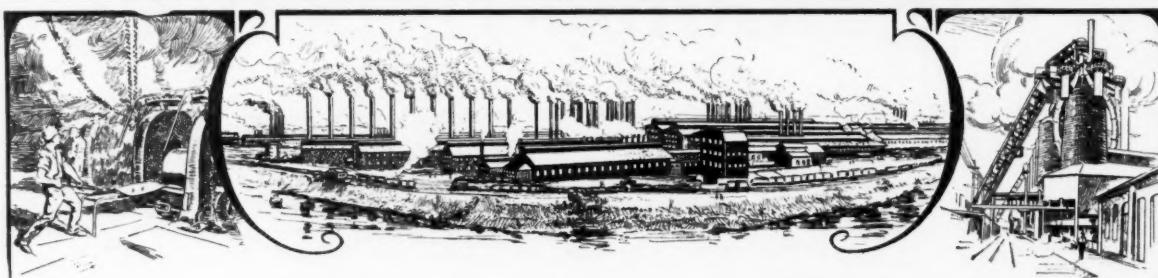
The menace to buildings through vibration has been chronicled fully in the newspapers, wherein the details were given of many accidents.

Among them were the crashing down of the ceilings in two Broadway Billiard Parlors; the injuring of a number of children by the collapse of a public school ceiling caused by the vibration due to the discharge of a battery of guns at Fort Hamilton; and the falling of ceilings in many homes and tenement houses during the dynamite explosions attending the building of various subways.

Steel ceilings have solved this problem of vibration, but several of the New York accidents brought out the fact that there is a right way and a wrong way to apply steel ceilings. In the case of the collapsed ceiling in the Slossen Billiard Parlor, a metal ceiling fell because it had not been applied in the proper manner.

It cost the Pennsylvania Railroad millions of dollars to build their vibration proof tubes because they had to be so constructed that no part would ever work loose. It is, however, not practical to build a dwelling house, or a commercial, or industrial building that will be absolutely vibration proof. But it is essential to life and property and to the conserving of financial resources that an effectual and inexpensive method be adopted by which the fatal consequences of oscillation may be prevented.

The metal ceiling applied over the old plaster in the Slossen Billiard Parlor and the falling of the ceiling in the Hotel Ansonia billiard parlor had their lesson. The matter remained



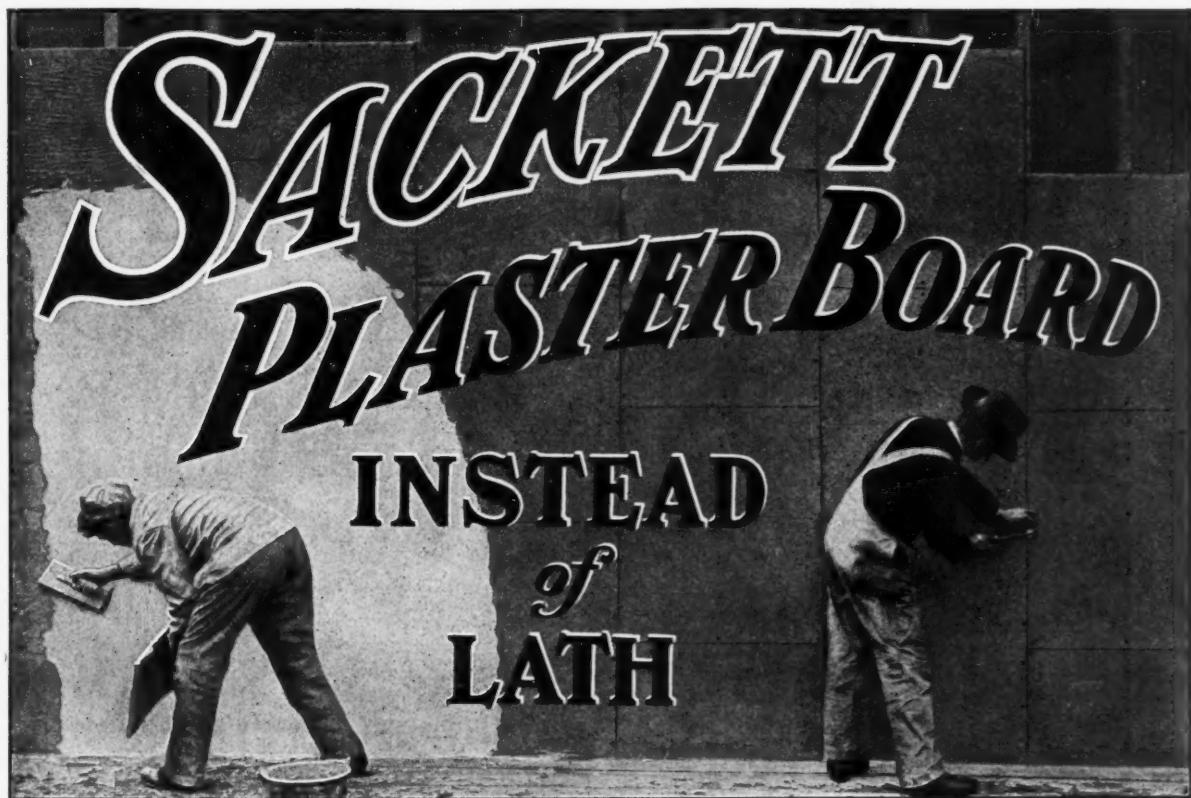
High grade Sheet and Tin Mill Products— Black and Galvanized Sheets Tin and Terne Plates Formed Products

We are manufacturers of Sheet and Tin Mill Products of every description and for every known purpose. Write nearest District Sales Office for full information and quotations. Send for our Weight Cards and Booklets, valuable to every builder.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

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THE NATIONAL LATHING MATERIAL

**By right of Superior Merit the Logical Successor of
Wood and Metal Lath**

Fire-proof Sound-proof Cold-proof Heat-proof Trouble-proof

Not an experiment—comparative tests and the “test of time” by years of actual use in thousands of buildings—large and small—throughout the United States and Canada prove its value.

SACKETT PLASTER BOARD

combines lathing, fireproofing, soundproofing, heat and coldproofing in one simple, inexpensive operation. In the construction of plastered walls and ceilings it is a

WONDERFUL IMPROVEMENT

—the Ideal Lathing Material. It is modern—progressive—efficient. Avoids buckling, plaster cracks, stains, future repair bills and the other defects common to ordinary lath construction.

SAVES TIME—SAVES PLASTER

and makes walls and ceilings as they should be—safe, sanitary, comfortable and durable.

Made of gypsum, a natural fire retardant; comes in sheets 32x36 inches, in thicknesses of $\frac{1}{8}$ inch and $\frac{3}{8}$ inch. Composed of alternate layers of calcined gypsum and strong fibrous felt. Nailed direct to studding, furring or joists and plastered over. Quickly applied and affords an even, perfect plastering surface—speeds construction.

SACKETT Plaster Board is an efficient and economical material widely used for a variety of purposes, namely:

Instead of wood, metal and other lathing materials in the construction of walls and ceilings. The dry board and U. S. G. Co.'s gypsum plaster bond together into a solid inseparable mass.

Instead of lumber for sheathing under weather boards, to insulate against heat and cold, and as a fire stop.

Under roof boards, in hot air flues, dry kilns, etc., as an insulator and fireproofing.

Between floors as a sound deadener and fire stop.

On exposed wooden surfaces in mill and warehouse construction as a fire retardant.

SACKETT Plaster Board is handled by up-to-date dealers. Our mills have a capacity of over one million square feet per day, and being located at widely separated points enables us to supply this material promptly and economically at any point in this country and Canada.

The advantages gained by the use of SACKETT Plaster Board are of vital interest to every contractor and builder. We want you to know its merits and will gladly send full information on request—ask for booklet “A.”

**UNITED STATES GYPSUM CO.
CHICAGO**

NEW YORK

CLEVELAND

MINNEAPOLIS

KANSAS CITY

SAN FRANCISCO

Johnson Offers Free Samples

S. C. Johnson & Son of Racine, Wis. are offering to send to our readers liberal free samples of their famous wood finishing materials post-paid. This is being done that all of our readers may be familiar with the superior merits of the goods manufactured by this old and reputable concern, who have been wood finishing authorities for 30 years.

With these free samples, they will send a copy of the last edition of their book "The Proper Treatment for Floors, Woodwork and Furniture." To get samples and book free all that is necessary to do is to fill out the coupon, addressing to S. C. Johnson & Son, Racine, Wis.

Johnson's Wood Dye

is made in 15 standard shades, as follows;



- No. 120 Fumed Oak
- No. 126 Light Oak
- No. 123 Dark Oak
- No. 125 Mission Oak
- No. 140 Manila Oak
- No. 110 Bog Oak
- No. 128 Light Mahogany
- No. 129 Dark Mahogany
- No. 130 Weathered Oak
- No. 131 Brown Weathered Oak
- No. 132 Green Weathered Oak
- No. 121 Moss Green
- No. 122 Forest Green
- No. 172 Flemish Oak
- No. 178 Brown Flemish Oak
- Half Gallons, \$1.50 each

Any other shade may be easily produced, as each shade may be lightened by adding alcohol and darkened by adding No. 172 Flemish Oak Dye.



To Readers of American Carpenter and Builder

Johnson's Under-Lac is a spirit varnish which will not chip, mar or scratch. It is better than shellac or varnish as it can be easily applied and does not raise the grain. Neither is it thick and sticky like varnish—it dries in a half hour. Gallons \$2.50 each.

Johnson's Wood Panels—In addition to sending free samples of Johnson's Wood Dye and Under-Lac, we are glad to supply painters and contractors with panels of various woods finished with Johnson's Wood Dye, Under-Lac and Prepared Wax.

If you care for a set of these panels drop us a line—and we shall be pleased to send them to you without any obligation whatever on your part. You will find the panels very convenient to show prospective customers and they will assist you in pro-

curing contracts
at Good Prices.

Mail the Coupon now for samples, panels and book, "The Proper Treatment for Floors, Woodwork and Furniture."

**S. C. Johnson
& Son**
Racine, Wis.
U. S. A.

"The
Wood Finishing
Authorities" / ACB5.



Please
send me
F R E E
samples of
Johnson's
Wood Dye, No.
....., and John-
son's Under - Lac.
Also Wood Panels and
booklet, "The Proper
Treatment for Floors,
Woodwork and Furniture."
I agree to test the samples and
if they are satisfactory will use
and recommend them in my work.

Name.....

Address.....

a mystery until representatives of The Berger Manufacturing Company of Canton, Ohio, big manufacturers of steel ceilings, investigated and located the cause in an absurdly easy manner.

The steel ceiling in the Slosson billiard room had not been applied in the proper manner and therefore fell with a crash, an easy victim to vibration. The nails holding the steel ceiling furring, which were placed over the old plaster, were merely driven through the plaster and through the plaster lath above. There was no support, nothing to keep the steel ceiling in position except short nails driven through the plaster and lath. It was natural that this would not be sufficient even were there no perceptible vibration.

The Berger Manufacturing Company's "Classik" steel ceilings and method of applying their steel ceilings has been commended in connection with vibration proof construction by those who assisted in the investigation of the disastrous accidents in New York. In Berger's construction longer nails are used and they are not merely driven at random through the plaster and lath, but placed uniform and so that they will enter the floor beams and joists at least 2 inches. It is impossible for such a constructed steel ceiling to fall inasmuch as it is applied to the strong immovable floor beams or joists and not simply to the weak plaster and lath.

Vibration has caused more than one accident where plaster is used to cover ceilings of large spans. Plaster is not safe under those conditions because vibration will, from above, shear off the key of the plaster. This may be caused by the falling of packing boxes on the floor above, the passage of street cars, heavy loaded motor or team trucks nearby or the constant walking overhead. More than that, a water leak will disintegrate the key and the plaster will fall as a result.

Accidents of this sort due to various causes—besides those enumerated, are costly. This is illustrated by the fact that the

owner of the Hotel Ansonia placed his loss at \$4,000. Hundreds of plaster ceilings in tenements fall upon sleeping inmates during the construction of the subways which caused owners of tenements and apartment houses to insure themselves against financial loss and probable lawsuits by strengthening their ceilings and having steel ceilings applied as proof against the menace of vibration.

The properly applied steel ceiling, as made by The Berger Manufacturing Company, Canton, Ohio, and installed by their agents, are not only vibration proof but decorative. This is shown by the fact that the magnificent dining room in the Broadway Central Hotel is done in Berger's "Classik" steel ceilings, also King's Park and Central Islip hospitals, New York, and public schools, Philadelphia. The Berger "Classik" steel ceilings are also used in the ware houses of James H. Dunham & Co., New York, Snellenberg Stores and factories, Philadelphia, where packing boxes fall about the floors with no bad effects. The Berger's "Classik" steel ceilings have also been installed over the old plaster ceilings in St. Louis public schools.

A New Combination Woodworker

The Tannevitz Works, Grand Rapids, Mich., are completing the tryout of a new combination woodworker for millmen, contractors and builders. It will be placed on the market within the next thirty days. The machine will be illustrated and discussed to some length in a later issue of this journal. Such information as has been given out so far indicates that this concern has spent over a year of careful investigation and consideration of the needs of this branch of the woodworking industry. They promise that the result of their labor will be recognized as a decided step upwards for all contractors, builders or millmen who are interested in modern methods for

This book will show you how you can get a better price for the homes you are building.

Sketch Book of Fireplace Designs

This book is a loose leaf folio with detachable pages. The designs architecturally correct and show elevations and ground plans of many styles of fireplaces and mantels.

Every home owner or home buyer realizes the advantage of a fireplace with its ventilating and heating utilities. Attractive fireplaces in every room will do more to sell a home than anything else. Whether you are building new homes or remodeling old ones—this folio will be of great assistance to you.

The Home Fireplace and Mantel Co.

Write today for this folio of designs

Write for it today. Let us show you more in detail how the use of Fireplaces and Wood Mantels in every room will positively bring returns in better rentals—increase selling prices and preferences for your houses.

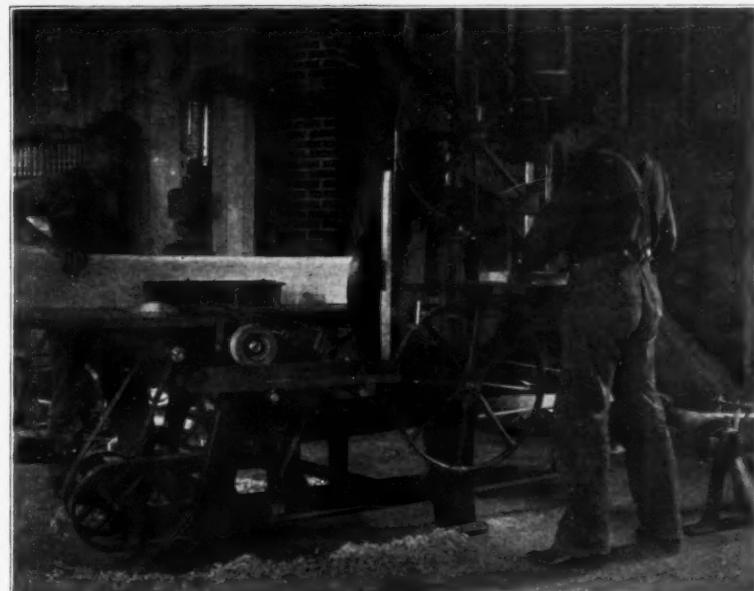
Get the portfolio today.

Room 611
State Life Building

INDIANAPOLIS, IND.

**"It runs
like a
Sewing
Machine
and does
the work
Perfectly,"**

*Said Mr. PINNICK,
of Richmond, Ind.*



Above illustration shows a No. 14 FAMOUS Universal Woodworker in actual operation. It does sixteen different kinds of work.

The Sidney Tool Co., Sidney, Ohio.

Gentlemen—Inclosed find check in full for my account, less three dollars for expenses which you ordered me to deduct. This machine is as represented, if not better. To say that I am pleased is putting it very mild. It runs like a sewing machine and does the work perfectly.

Yours truly,

HARRY PINNICK, 112 S. 10th St.

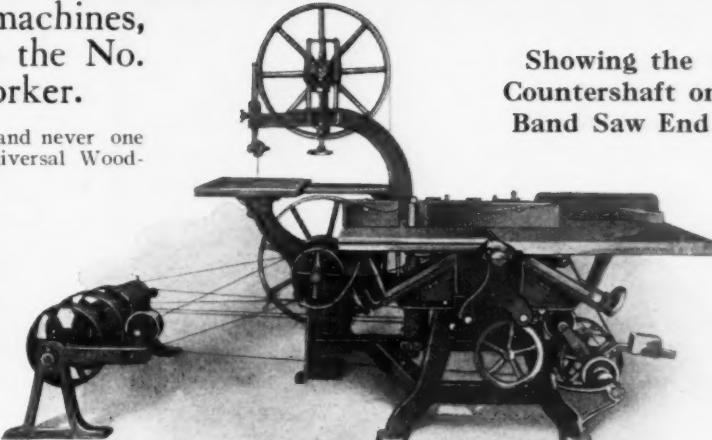
1 27" Band Saw.	6 Pony Planer	12 Knife Grinder
2 12" Jointer	7 Tongue and Pole Rounder	13 Emery Grinder
3 Saw Table, with raising and lowering arbor	8 Hollow Chisel Mortiser	14 Band Re-Saw
4 Single Spindle Shaper	9 Single End Tenoner	15 Spoke Tenoner, Rim Borer and Wheel Equalizer
5 Boring Attachment, arranged on special boring spindle.	10 Drum Sander	16 Adjustable Felloe Rounder
	11 Disc Sander	

The above sixteen woodworking machines, embodied on one base, comprise the No. 14 FAMOUS Universal Woodworker.

This machine has a **record**—over six hundred in use and never one "kick." The FAMOUS is the only **perfected** Universal Woodworker; the money you pay for others is paid for experiments.

Competitors can imitate **only** our advertisements. They cannot duplicate—or even imitate—our machine or the work it does. The FAMOUS was the **first** Universal Woodworker; it was the **first** on which sixteen different kinds of work could be performed; it is the **only** woodworker which can be relied upon to give first-class service. **Play safe.** Don't experiment. Buy a FAMOUS when you buy a woodworker.

We give a broad-gauged guarantee that protects the buyer as long as he may have the machine—and which protects any person who may buy it from him. *Write for literature and liberal terms.*



Showing the
Countershaft on
Band Saw End

THE SIDNEY TOOL CO.,

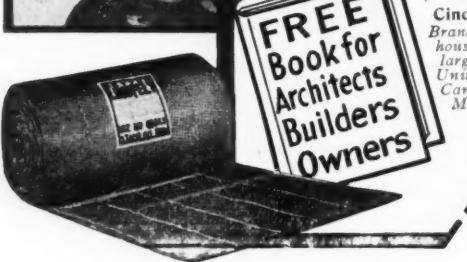
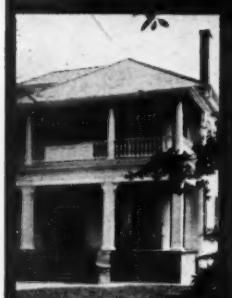
Sidney, Ohio

TORONTO
The A. R. Williams Machinery Co.
Front Street

MONTRÉAL
Williams & Wilson
320-328 St. James St.

WINNIPEG
The A. R. Williams Machinery Co.
260 Princess Street

VANCOUVER
The A. R. Williams Machinery Co.
57-61 Alexander Street



Their Rooms Kept Warm In Winter, Cool In Summer

THESE homes and this magnificent high school building are the more highly valued because their walls are insulated with Linofelt and not with ordinary building paper. In the case of the high school building, each room is very quiet and isolated because Linofelt is sound-proof and noise is kept out. We want architects, builders and owners to send for our beautiful free books which show many such illuminating examples, tell all about Linofelt, Lith Board and Rock Wool, give the plans, methods of sheathing walls, floors and ceilings to keep out the heat of summer and have the house cool, to keep out the cold of winter and have the house cozy and warm in every cubic inch of its space and keep out all noise all the time.

LINO FELT

The white house at the top of the left border is in New Orleans; the Linofelt used in it cost only \$3 more than ordinary building paper. It has added to the value of the house to the actual value of the house. Considering tests show Linofelt is 38 times more effective than building paper, we do not believe there is a single architect, builder or owner who will not insist on using it once he knows about it.

Linofelt is an insulating quilt. No other is as light as Linofelt cubical contents considered. It is odorless, chemically clean, sanitary. It saves 40 per cent in fuel bills. It is the best sound deadener. The same sound heard 200 feet through ordinary building paper is heard only 2 feet away through Linofelt. These features make it especially valuable for homes, hospitals, sanitaria, office buildings, school buildings and all structures where comfort and quiet are absolutely essential.

Send for Our Beautiful Book

Let us tell you what Linofelt is, how it is made and this alone will convince you that it will do more than we claim it will—that its adoption in your work will prove a lasting benefit and satisfaction to you. Write for the FREE Books for Architects, Builders and Owners today. Your nearest dealer's name on request.

Union Fibre Co.
Manufacturers
21 Union Ave.,
Winona, Minn.



The Philip Carey Co.

Distributors
Cincinnati, Ohio
Branches and warehouses in all the large cities in United States, Canada and Mexico.
Union Fibre Co., 21 Union Ave., Winona, Minn.
Kindly send for your free catalog.

reducing labor costs and quickening the completion of jobs. Such a machine would prove of great benefit and it is suggested that all interested readers write the Tannevitz Works, Grand Rapids, Mich., for the advance information which it is understood will soon be off the press.

The Grindstone Must Go

It is an old but very true saying that necessity is the mother of invention.

About sixteen years ago in a little place which actually measured less than 30 by 30 feet, the Luther Grinder Mfg. Company started in to manufacture the successor to the grind stone. Necessity demanded such a product, inasmuch as the old grindstone was incapable of doing in quick enough time the work required of it; consequently the advent of the grinder.

The Luther Grinder Mfg. Company's plant to-day covers about one acre of floor space, or 43,560 square feet, or, in other words, this Company has increased its factory space over forty times. Now, there must be a good reason for such an enormous increase and this reason is apparent to every one of the million people who are to-day using the Luther grinder



New Factory Luther Grinder Mfg. Co.

for grinding their tools. One million is a good many more than anyone can appreciate, but there are today that many users of Luther grinders in the U. S. A.

It is claimed that one of the Luther mechanical special grinders is needed by every reader of these pages, inasmuch as this tool comprises eleven separate and distinct tools, as follows:

1. One rough carborundum wheel.
2. One fine carborundum wheel.
3. One chisel grinding attachment.
4. One twist drill attachment.
5. One polishing spindle.
6. One buffer.
7. One polisher.
8. One oil stone.
9. One carborundum hone, in leather case.
10. One mechanic's scythe grinder.
11. One foot-power attachment.

This tool will save any workman hours of time. Mr. Sears, of Pentwater, Mich., writes that with the use of the Luther grinder he can sharpen a chisel in two minutes which would take him one whole hour, using the old method.

Luther grinders are mechanically perfect. They are not experiments, inasmuch as sixteen years have elapsed since their experimental stage and each year has shown some marked improvement. This company claims that tools can be sharpened twenty-five times faster with one of their grinders than can be done in any other way. It seems that you should be one of the million users of the Luther grinder. You will find that your time and your patience will be saved. Write at once for interesting catalog.

ASBESTOS "CENTURY" SHINGLES

"The Roof that Outlives the Building"

How long your client's pride in the building will last depends on how the roof holds out in the face of exposure to weather and storm. Long after the average roofing begins to show its age, cracked or warped, rotted or rusted, Asbestos "Century" Shingles are bright and fresh as new.

Asbestos "Century" Shingles are the first practical lightweight roofing of reinforced concrete—made of hydraulic cement with interlacing asbestos fibres—compacted by tremendous pressure.

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania



Asbestos "Century" Shingle Roof—Residence of E. W. Twaddell, Devon, Pa.; E. S. Parson, Philadelphia, Pa., Architect; Simon Heister, Wayne, Pa., Contractor

They are weatherproof—fireproof—time-proof. Cannot rot, rust, crack, split or blister. They literally outlive the building—without repairs or painting.

You can get Asbestos "Century" Shingles in shapes and sizes to fit any architectural scheme. Three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red. Ask your roofer for new quotations. Write for Booklet—"Everlasting 1911."

Write Today for this Catalog

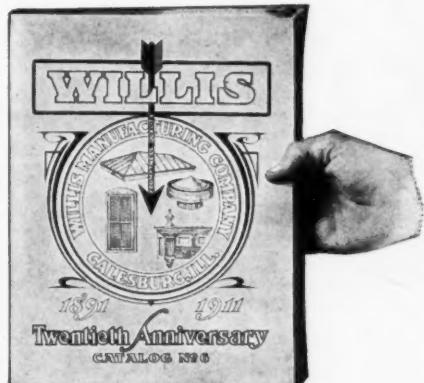
We have just published our new *No. Six Catalog of Architectural Sheet Metal Building Material*, containing 180 pages of helpful information to *Every Contractor and Builder*, and it is *FREE*, postpaid, to any interested person.

It is the most complete catalog of its kind ever issued and we want to place it with all those who are interested in Cornices, Skylights, Steel Ceilings, Store Fronts, Ventilators, etc. Our facilities enable us to serve all customers promptly and our twenty years of experience in this one line insures you the Very Best Value for Your Money.

WRITE US TODAY

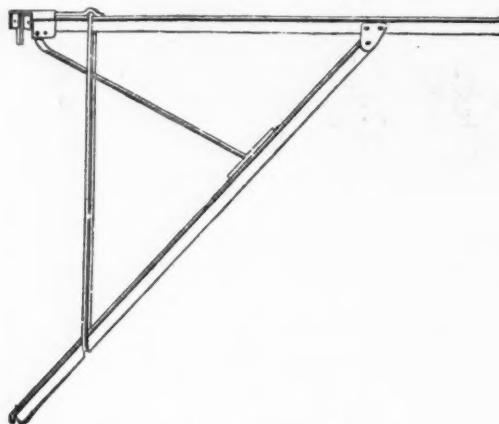
WILLIS MFG. CO., Galesburg, Illinois

Originators of the Famous Willis Hip Shingle



Wheeler Safety Scaffold Brackets

It is claimed that by the use of these improved devices, builders can save from \$15 to \$35 and perhaps more, on every frame house they build. The time and cost of labor in putting up the old-fashioned wood scaffolding or staging, the cost of taking the same down, the loss in nails and damaged lumber, are all done away with. All this useless expense makes quite an item in a number of houses in a season.



Wheeler Safety Scaffold Brackets

Then the element of safety is very important. There is no danger of loss of life or injury to limb from the scaffold sagging or breaking. Men will work better when they feel that they are safe.

The brackets fold up compactly and a dozen can be carried in an ordinary buggy when transferring from one job to another. They are made of best T-steel, never wear out and

will save many times their cost in economy of placing and handling, in better work on the job, in avoiding waste of material—in one season.

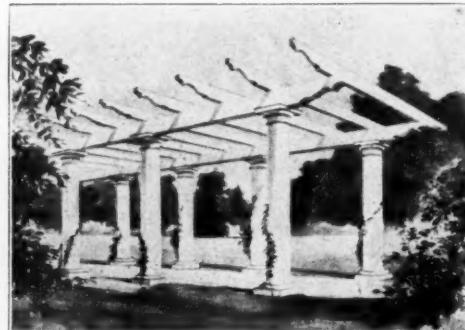
A free trial offer is made by the manufacturers in the advertisement in another column, to which we direct the special attention of all builders. The opportunity is offered to prove all these claims without expense to the builder. Particulars of this trial offer may be had by addressing American Steel Scaffold Co., 38 Equity Building, Detroit, Mich.

Have You Investigated Amatite?

Nobody who is buying ready roofing from time to time has any business to be ignorant of the fact that there is a very large and rapidly increasing amount of no-paint roofings coming into use. The painting feature was the only objection to the old-style smooth-coated roofing. Painting cost money and was very apt to be neglected in the interests of other matters that were more pressing—then, before the owner woke up, the roofings had begun to lose their waterproof characteristics, were absorbing water and being injured by frost. Accordingly, the advent of Amatite, with its practical mineral surface, was hailed with much satisfaction by ready roofing users, and the sales of the new invention have been increasing with tremendous rapidity. The simple fact that Amatite roofing costs no more than the painted kind, will last as long and longer, and involves no maintenance expense whatever, made it a favorite with building owners all over the country.

Simply as a matter of relative economy and satisfaction, look up Amatite. You can do so very easily by simply addressing a request for a sample to the nearest office of the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle.

**We will pay
a Liberal
Commission
to Builders**



Design No. 1, as shown in our catalog.

**who will help
us sell our
Pergolas—
“ready to set up”**

Here is Our Proposition. Read it Carefully.

There is a steadily growing demand for pergolas among owners of modest priced homes—especially in the smaller towns and suburban districts. This is due to the fact that nothing so helps the appearance of a garden or gives the desired character to a house like a well designed pergola.

Heretofore the principal obstacle to the building of pergolas has been the excessive cost. We have removed this obstacle by selling pergolas ready to set up.

They are shipped to the customer in crated sections all ready for the carpenter to assemble them. In style, appearance and quality they are the equal of similar equipment when designed by an architect and made to order. The cost of our pergolas, however, is only about one-half that of the made to order kind.

Practically everyone who has even a good sized yard is in a position to buy one of our pergolas. There are probably dozens of people right in your town who at one time or another have considered building one, but who have been deterred by the expense. Our method places a correctly designed, attractive pergola within the reach of such people.

We want a good builder in every town to help us reach these people. We will pay him a liberal commission on every sale, and in addition, the builder charges the customer for the assembling, painting, etc.

Our advertisements in leading magazines are bringing us several hundred inquiries a week from all parts of the country. Inquiries received from towns where a builder represents us will be turned over to him to follow up. We furnish him with beautifully illustrated catalogs showing the various styles and prices, and working plans are sent with each shipment to facilitate assembling.

This is a new field—practically untouched, and there is money in it for any builder who is willing to give it a little time. It involves very little work and he will find that being in touch with practically everyone who is going to build, many sales will come easily.

Write us today for further particulars and selling plans. We will be glad to answer any questions.

The Pergola Company

Association Building

CHICAGO

Mr. Door-Dealer Read These Figures

Dry but they have a very direct bearing on your future business.

Western Pine standing,	175,856,520,000 feet
Red Wood "	75,000,000,000 feet
FIR "	374,000,000,000 feet

That means that those who do not derive advantages and profits now in a few years will be driven to the use of

Chehalis Fir Doors

"The Stock Door of the Future"

These doors offer you right now what you will eventually be glad to accept. They offer you the advantages of a door *built right*, from a wood that is best preserved—cheapest bought and more readily adaptable to the rich finishes of walnut, oak or mahogany than any other hard wood. You can only tell the difference by the grain.

Nothing gets into Chehalis Fir Doors but the choicest *Old-Growth Yellow Fir*. That means the right kind of timber to start with.

Let us tell you how the doors come out at the finish. Send for catalog (F). If you'll send a dime to defray postage we will send samples finished in natural woods; oak, mahogany, walnut, etc. Write at once.

Chehalis Fir Door Co.

Chehalis, Wash.

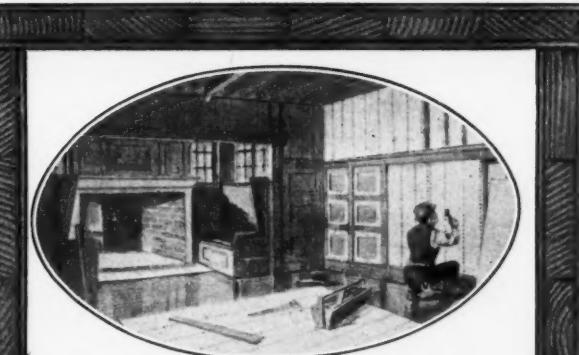


Ornamental Theatres

Plaster Relief Decorations
Theatres Designed Everywhere

Write for illustrated Theatre Catalog. Send us Sizes of Theatre for Special Designs.

—The—
Decorators Supply Co.
2525 Archer Ave., CHICAGO, ILL.



You Can Safely Recommend **Compo-Board**

It makes the best walls and ceilings. Dry, warm, fire resisting and moisture proof.

Compo-Board walls will outlast lath and plaster. Will not crack, crumble or fall off. Can be easily put on without waste of time waiting for plaster to dry.

They always look well. No ugly blotches where moisture has gathered. No unsightly scars where the walls have been patched. Will take paint, paper or kalsomine perfectly.

In addition to being a perfect wall lining, Compo-Board can be used as a back plaster, for partitions, for lining summer cottages, barns and poultry houses. It has many uses around the house and in the office and factory.

Compo-Board is made of strips of thoroughly dried lumber matched together and well glued. These strips are then covered with a special pressed moisture proof paper, which is cemented under intense heat and heavy pressure. This makes a wall lining that will last indefinitely.

Can be had in strips four feet wide and one to 18 feet long, any length you want in even feet.

Send for Sample and Booklet

Fully describes Compo-Board and its many uses and advantages and the sample will show you what it is.

NORTHWESTERN COMPO-BOARD CO.

5777 Lyndale Ave. No. Minneapolis, Minn.

The border of this advertisement is a cross section view of Compo-Board.

Granite TRADE MARK ROOFING



A six inch lap is better than a three inch lap. It gives better protection against leaks and permits nailing down on the under sheet only, so that no nail heads appear on the surface. Otherwise this is the same Granite Roofing that we have sold for 26 years for use on great factories. It is immune from damage by coal smoke or cinders, and it has a sea grit surface which makes painting entirely needless. Behind it is a reputation that has passed the Quarter Century Mark.

EASTERN GRANITE ROOFING CO.

19 Battery Place, New York Chicago Pittsburgh

The Great and Growing Use of Concrete and Stucco In All Buildings Demands That You Investigate These Superior Finishes For All Cement Surfaces

Everywhere throughout the land are modern, artistic, sanitary concrete, cement and stucco buildings replacing those of wood. Keep pace with the times—know and use Glidden Advance Finishes for protecting, decorating and damp proofing all modern concrete, cement and stucco buildings.

These products are classed among the most important building materials brought out during the past 35 years. They open up a new, rich and profitable field for the Contractor and Builder—a field that is growing greater every day. Ordinary finishes will not do for concrete and cement structures, they demand a special treatment of their own.

Glidden's Advance Finishes

have been developed after years of study and experiment in our laboratories, and, are scientifically correct and in keeping with the best practice in modern concrete engineering. They produce results that are not obtainable with any other materials on the market.

GLIDDEN'S LIQUID CEMENT

renders the surface of a concrete, cement or stucco building, proof against the inroads of dampness, insures a uniform color, doing away with that blotchy or mottled appearance due to the uneven drying out of the concrete, which so often disfigures an otherwise handsome building.

It comes in a variety of shades including Colonial and Pompeian Buff as well as pure white. It is easily applied with a brush. Write for descriptive booklet and free working sample.

GLIDDEN'S CONCRETE FLOOR DRESSING

is another special product that offers you a big opportunity. Spread over a concrete or cement floor, it makes a surface that looks and wears like one of tile—an ideal basement floor covering because it keeps the cement dust from rising.

GLIDDEN'S WATERPROOF FLAT FINISHES

are especially intended for interior use upon plain, rough and smooth finish plaster, on cement, metallic ceilings and wainscoting and composition surfaces such as beaver boards. They are made in white and a variety of colors and produce a beautiful, sanitary, soft, flat, stone-like finish which can be washed without detriment. They are cheaper than wall paper, more lasting than water colors.

We have room here only for a brief description of these materials, but it should be enough to show you, as a builder, what it would mean to be in a position to intelligently quote on work for which they are being specified.

Let us give you this information. Write today for our free book on Advance Finishes for modern building construction. Address,

The Glidden Varnish Company
351 Glidden Bldg. :: CLEVELAND, OHIO

BRANCHES:
New York
and Chicago

FACTORIES:
Cleveland, Ohio
Toronto, Canada

A Welcome Improvement

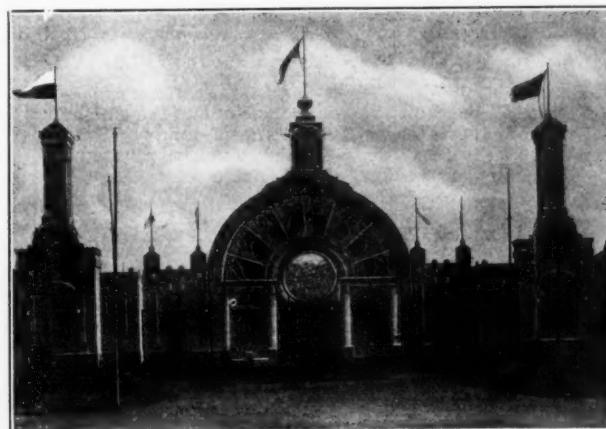
The automatic sash holder which does away with sash weights, pulleys, balances, cords, etc., is something that has been needed for a long time. When this invention is installed troubles with breaking cords, catch weights or bound pulleys disappear. It is so adjusted that a window can be opened and held to any desired point with safety.

This contrivance is a great time saver and also a money saver. It is called the Automatic Sash Holder and is manufactured by the Automatic Sash Holder Co., 277 Broadway, New York City.

The manufacturers advise us that they have just shipped three hundred sets to Tokyo, Japan. The Japanese are always keen for progress.

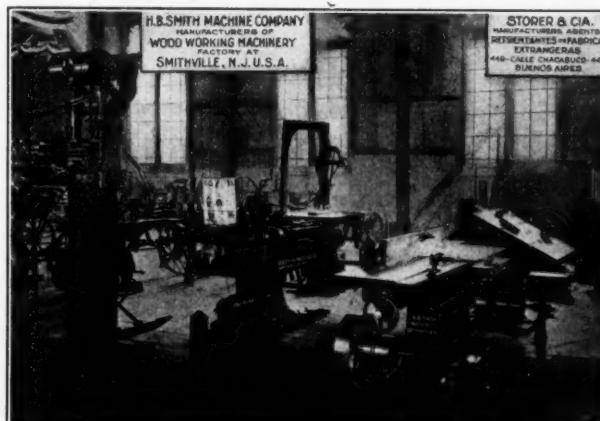
H. B. Smith Machine Co. Awarded Gold Medal

The Centenary Exposition, which has been in session at Buenos Aires during the last several months, is in honor of the 100th birthday anniversary of the Argentina Republic, and therefore as a celebration is not unlike our Centennial exhibition in Philadelphia some thirty-five years ago. The H. B.



Machinery Building, Buenos Aires Exposition

Smith Machine Co., Smithville, N. J., had an exhibit of some five or six wood-working machines, in charge of Messrs. Storer & Cia., of Buenos Aires, who represent the company in Argentina, Paraguay and Uruguay. The machines exhibited were a hand planer or jointer, a bevel saw table, a



H. B. Smith Machine Co. Exhibit

single end tenoner, a reciprocating mortiser, a jig saw of modern design, and a 36-inch standard band saw machine. The company advises it was awarded a gold medal—highest award given in any section of wood-working machinery—in competition with French, Swedish and English manufacturers.

Builders and Contractors Who Want the

Best Steel Butts & Hinges

Should Look for This

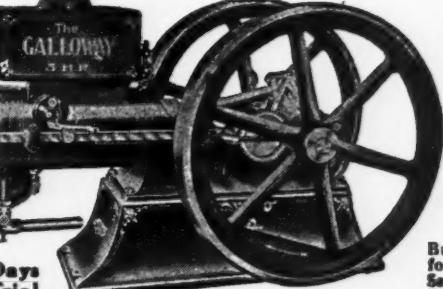


Printed on the Labels
Stamped on the Goods

LITERATURE FREE

The Stanley Works
NEW BRITAIN, CONN.

New York :: Chicago

5 H. P.
\$119.5014-28
H.P.Thirty Days
FREE TrialBuilt
for
Service**CONCRETE MEN ATTENTION**

Galloway Engines are made in all sizes from $1\frac{1}{2}$ to 28 H. P. They run on gasoline, naphtha, kerosene or distillate. We are furnishing complete mixing rigs and our price means a big saving of money to you—\$30 to \$300 depending on the engine you buy. You have the privilege of trying the outfit 30 days. If it is in any way unsatisfactory we refund your money with interest and pay freight both ways.

The Galloway Gasoline Engine
SIMPLEST ENGINE BUILT.

Only four things to do:

Turn on the switch, turn on the oil, turn on the gasoline, give the fly wheel a start and the Galloway will go right along all day without further attention. It is ideal power for a small shop, and it's got the capacity to take care of your growing needs.

The Galloway has been classed as a standard, high-grade engine for fifteen years. Over 4,000 in use in Iowa alone. Thousands in every other State and Territory.

If you try the Galloway engine, you will find that it is not overspeeded. Remember, the bore and stroke count, and you don't have to drive your engine faster than you ought to drive it to get the rated horse power. Rated by actual brake tests.

On the larger sizes, if it is not entirely convenient for you to pay all cash, we will take your note for the balance at the regular rate of interest for six months.

The price given is for the five-horse power only, but we make these engines in seven sizes.

Ask for free information on stationary and portable gasoline engines from two to twenty-eight horse power. We make the best, and we price them at a reasonable figure. Write today.

The William Galloway Co., 1145 Galloway
WATERLOO, IOWA

OLDS HOISTS

OLDS GASOLINE CONTRACTORS' HOISTS are built in all sizes, 3 H. P. to 12 H. P. and in several types to meet all requirements.

Do not buy without first getting our printed matter and prices.
Gasoline Engines 1 $\frac{1}{2}$ H. P. to 100 H. P.

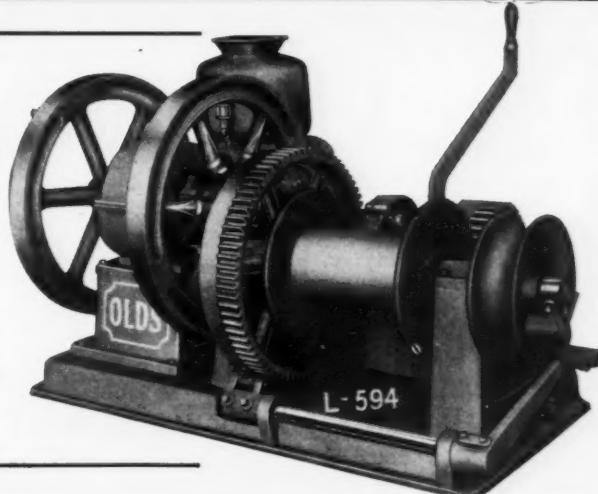
Seager Engine Works
Lansing, Mich.

Olds Gas Power.
2112 Central St.
Kansas City

Olds Gas Power
1007 Farnum
Omaha

Olds Gas Power
204 N. Los Angeles St.
Los Angeles

Olds Gas Power
65 Beverley St.
Boston

**WE MAKE ANYTHING IN WOOD**

Therefore, Mr. Builder, don't it stand to reason, that being equipped as is our factory to turn out with special machinery any and every wood work requirement that we can give you superior work and better material

AT A FAR BETTER FIGURE
NO JOB IS TOO SMALL. NO JOB IS TOO LARGE.

We employ only competent workmen and the most modern machinery, and thus can give PROMPTEST ATTENTION to your needs—that is; we won't hold up your job. We don't want the job if we can't SAVE YOU MONEY.

LET US GIVE YOU A FIGURE ON YOUR NEXT LIST.

KANSAS CITY SASH & DOOR CO.,

KANSAS CITY, MO.

IT IS NOT THE
AMOUNT YOU
RECEIVE FOR A
JOB THAT
COUNTS.

IT'S THE PROFIT
YOU MAKE.

Ornamental Iron Work

McLaren Bros. of Cleveland, O., wish to call the attention of architects, builders and contractors to the fact that they have had over 18 years practical experience in the manufac-



One of the McLaren Ornamental Stairs

ture of structural and ornamental iron, wire and brass work and are in a position to quote interesting figures on anything that is submitted to them.

They make a specialty of plain and ornamental iron stairs, railings, fire escapes, window guards, elevator cars and enclosures and wire window guards, office and stock room railings, wire signs and grille work, but would be pleased to figure on anything you may submit them.

Hand Power Elevators

To anyone who is contemplating installing a dumb waiter or hand power elevator, the catalogue of the Sedgwick Machine Works, of Poughkeepsie, N. Y., will be very interesting. These people manufacture all kinds of hand power elevators and dumb waiters. Their catalog "K" shows completely the various models they manufacture and they advise us that they will be pleased to send it to anyone interested.

National Mfg. Co. Enlarge Plant

The National Mfg. Co., Sterling, Ill., announce that they have completed a large addition to their manufacturing plant. Their fast growing business and maintenance of prompt service have made it necessary for them to increase their facilities and they are very glad that the work is completed.

These people make a very fine line of door hangers, door latches, door pulls, hinges, steel washers, butts, etc.

We have just received a new catalog from them, which is one of the best along this line we have ever seen. Every reader of THE AMERICAN CARPENTER AND BUILDER who is interested in builders' hardware should have a copy of it. Write to the National Mfg. Co., of Sterling, Ill., mentioning THE AMERICAN CARPENTER AND BUILDER and they will be glad to mail this valuable booklet to you.



A Safe Guide

When in the market for Varnish, remember this:

The high quality and splendid satisfaction-giving of Lowe Brothers "High Standard Paint" insures that you will get the same good value in

Lowe Brothers "Little Blue Flag" Varnishes

The same ideas that prevail in our paint factory are upheld in our varnish plant.

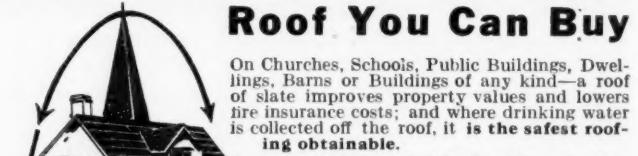
You will find the right varnish for your needs in our line as we make a varnish for every requirement. Not lowest in gallon price, but cheapest to use—cover more surface, stand more use and abuse, brightest, palest in color, easiest applied.

Suggestions Free—Write Us

If in doubt how to finish interiors, exteriors or any particular surface, we offer you the benefit of our experience without charge. Write for Fashions in Color for 1911 and suggestions for Color Combinations. Free.

The Lowe Brothers Company
450-452 E. Third Street
Boston New York Chicago Kansas City
DAYTON, OHIO

A Roof of Slate is the Best Roof You Can Buy



On Churches, Schools, Public Buildings, Dwellings, Barns or Buildings of any kind—a roof of slate improves property values and lowers fire insurance costs; and where drinking water is collected off the roof, it is the safest roofing obtainable.

As a roofing material of solid rock slate still stands supreme; not because it costs less (for the first cost is a trifle more than for shingles, iron or felt), but because it never wears out nor requires repairs.



Sea Green or Purple ROOFING SLATE

is absolutely impervious to climatic conditions. It resists the action of air, water, snow, ice, fire, sun and lightning; it cannot warp, crack, splinter, or decay. It is perfectly water-tight, and once laid—will outlast the building it covers.

Write to Us for Delivered Prices
on all sizes and grades of roofing slate delivered at your nearest railroad station. Also prices on Slater's tools and supplies.

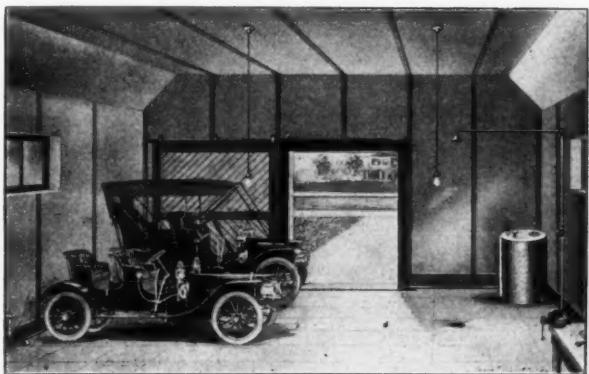
Ask for FREE Book of Instructions.
We solicit correspondence—even if you won't require the slate until later. Write to us today—now.

American Sea Green Slate Co.
"Roofs that Never Wear Out"
Box 125 GRANVILLE, N. Y.

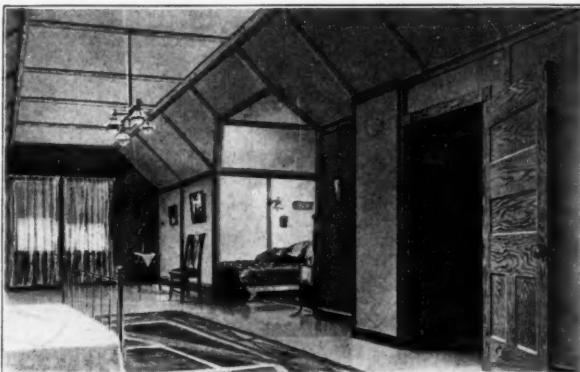
You Have Never Seen a Wall Board Made Like This



Note the construction of it—tough fibre board in the middle—two layers of waterproofing, then two layers of waterproof fibre—all put together under tremendous pressure. You can readily understand what that means in point of service.



The Garage lined with Utility Wall Board is warm, dry and handsome



Utility Wall Board transforms the unsightly attic into a cozy room at trifling expense

UTILITY WALL BOARD

Is a tough, fibrous, waterproof board—made in convenient widths and lengths. Nail it directly to the studding—no lath or plaster is needed—cut it with a saw to fit any space—put it on any time in the year. You don't have to wait for it to dry. ***It won't crack or warp—it keeps out the heat in summer and the cold in winter.*** It is extremely durable and is capable of wonderfully artistic decorative effects. It saves money for the user—it makes money for the carpenter or contractor.

We want to send a sample of Utility Wall Board and our handsomely illustrated Catalog to every carpenter and contractor in the country. Will you send us your name today?

Some Desirable Territory is Still Open for Live Dealers

THE HEPPE COMPANY
4503 Fillmore Street, - Chicago, Illinois

MONTROSS METAL SHINGLES

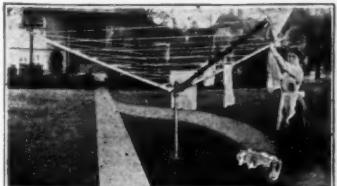
STOP all roofing troubles. A test of over 22 years proves that they are Durable, Serviceable and Economical. Fire, lightning and storm proof. Embossed, then heavily galvanized or painted. Will not leak, break, crack, blow off or rattle. Suitable for any building. Lighter than slate or tile, and outwear wood shingles or composition roofings. Every carpenter and builder who wants pleased customers and increased business, should recommend them. Allow a good profit on work.

Local Agents wanted; send for special offer. Illustrated catalogue, testimonials, prices, etc., sent Free. Write at once.

MONTROSS METAL SHINGLE CO., 102 Erie St., Camden, N. J.



The Roofing
that lasts as
long as the
building



CHICAGO-SUN CLOTHES DRYER FOR LAWN USE

durability and convenience in handling. Each arm operates independently. When closed, arms lock automatically. When opened, arms lock in position and stretch lines. When closed, arms lock automatically. Send for one today. Price \$10.00 complete, including steel post and metal-lined socket. If not satisfactory, return and we will refund money. Write for descriptive and illustrated free folder No. 62. Do it now.

THE CHICAGO DRYER CO., 383 South Wabash Avenue, CHICAGO, ILL.

Eliminates Clothes Posts.
Is portable and can be removed when not in use. Holds 165 feet of line. Excels all others in strength.

Sebco Expansion Bolts

A very fine expansion bolt is being manufactured by the Star Expansion Bolt Co., New York City. The manufacturers claim that in an actual test, a $\frac{1}{2}$ -inch diameter bolt



Sleeve or Shield Showing Ribs and Lugs



Half Shield Showing Clean Threads

3 $\frac{1}{2}$ inches in length, withstood a weight of 8,200 pounds before stripping the threads of the lag screw. It is also said that in various tests it has been found that the shield will strip the threads of the lag screw before pulling out. The shields are the same diameter at both ends, which gives an even firmer grip when expanded. The ribs are very sharp



Shield with Lag Screw

and deep, so that the building material fills in and around the shield when it is being expanded. This embeds the shield tightly in the material. These expansion bolts, it is claimed,

will never turn in the hole on account of the deep grooves and the two lugs which bite right into the material when the expansion is made.

Anybody desiring free samples of these bolts can obtain them by writing the Star Expansion Bolt Co., Dept. 5 R, 147-149 Cedar Street, New York.

Star Expansion Bolt's New San Francisco Office

Messrs. Otis and Squires, of 579-581 Howard St., San Francisco, are now the western sales agents for the Star Expansion Bolt Company, New York, manufacturers of the Sebco products. At the new western headquarters a much larger and more complete stock will be carried, including Sebco Expansion Shields, Sebco Anchors and various other Sebco products. All inquiries from the western field should be referred to Messrs. Otis and Squires, who will give all specifications prompt attention.

Otto Gas and Gasoline Engines

The advantages of gas engines as compared with steam engines fired by coal-oil, wood or coal are so rapidly becoming known that it is easy to account for their popularity. When you consider that gas engines are so much easier to start; require so little cleaning; require no chimney; give out no smoke or soot; leave no ashes to cart away; have no boiler with explosion risks (which means a lower rate of insurance); no water gauges or safety valves to watch; no fires to build or bank; it is no wonder that engineers and mechanics are so favorable towards them.

One of the best known gas engines is that manufactured by the Otto Gas Engine Works of Philadelphia, Pa., one of the

Your Success is our Necessity We Want to Show You Why

CAN you afford to figure a job of Metal Ceiling unless you are sure the cost of erecting will not exceed your estimate? Your success is our necessity because you will not buy our ceilings unless there is profit in them for you and satisfaction for your customers. Most of your success depends upon the fit.

We Have Solved the Problem

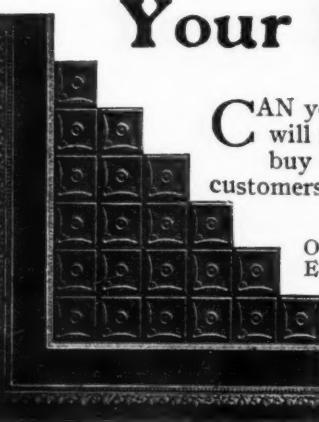
Our Double Bead Lap produces a thoroughly dust-proof and invisible joint. It is simplicity itself. Easy to fit, therefore cheapest to erect. This means profit and satisfied customers to you.

Another Secret

The great variety and high character of our Art Metal Ceilings and Sidewall Designs insure the customer's preference when shown our catalogue. Send us plans with all measurements and we will prepare drawings of appropriate ceilings, without charge, and name you low price on all material, F. O. B. your station.

Get our catalog right away.

The Tiffin Art Metal Co., **Tiffin, Ohio**
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Headquarters For Sash, Door and Blind Makers' Supplies and Special Machines

WINDOW PULLEYS (Cast and Sheet Steel). All sizes and finishes. Write for Catalogue.

ENTERPRISE PULLEY MORTISER. Equipped with Four Bits. Cuts Full Stile in same time required for single mortise.

ENTERPRISE POCKET CUTTER. Makes a Pocket both wind and water tight.

PIONEER MOULDING SANDER. Finishes Mouldings and Interior Trim equally as well as handwork, and at one-tenth the cost.

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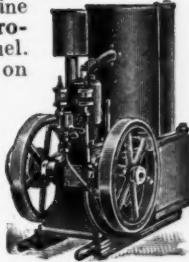
805 Tacoma Bldg., Chicago, Ill.

Use KEROSENE Engine FREE!

Amazing "DETROIT" Kerosene Engine shipped on 15 days' FREE Trial, proves kerosene cheapest, safest, most powerful fuel. If satisfied, pay lowest price ever given on reliable farm engine; if not, pay nothing.

GASOLINE GOING UP!

Automobile owners are burning up so much gasoline that the world's supply is running short. Gasoline is 9c to 15c higher than coal oil. Still going up. Two pints of coal oil do work of three pints gasoline. No waste, no evaporation, no explosion from coal oil.



Amazing "DETROIT"

The "DETROIT" is the only engine that handles coal oil successfully; uses alcohol, gasoline and benzine, too. Starts without cranking. Basic patent—only three moving parts—no cams—no sprockets—no gears—no valves—the utmost in simplicity, power and strength. Mounted on skids. All sizes, 2 to 20 h. p., in stock ready to ship. Complete engine tested just before crating. Comes all ready to run. Pumps, saws, threshes, churns, separates milk, grinds feed, shells corn, runs home electric-lighting plant. Prices (stripped), \$29.50 up. Sent any place on 15 days' Free Trial. Don't buy an engine till you investigate amazing, money-saving, power-saving "DETROIT." Thousands in use. Costs only postal to find out. If you are first in your neighborhood to write, we will allow you Special Extra-Low Introductory price. Write!

DETROIT ENGINE WORKS, 495 Bellevue Ave., DETROIT, MICH.



Every Carpenter Should Use SEBCO EXPANSION BOLTS

For fastening fixtures to walls or floors where ordinary screws will not hold. When the screw is inserted the shield expands with each turn, making it impossible to pull out.

Let us send you working samples. Also our catalog that will show you a way to do better work at no additional cost for labor or material.

STAR EXPANSION BOLT CO.

Catalog Dept. 5R,
147-149 Cedar St. New York City



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BATH ROOMS, VESTIBULES, PUBLIC BUILDINGS.

Sanitary—Inexpensive—Beautiful

Just Send Us Plan of Space to be Tiled, and We Will Quote
Lowest Price F. O. B. Your Station

CERAMIC—MOSAIC—ENCAUSTIC

IN WHITE AND IN DIFFERENT COLORS

WE SUBMIT DESIGNS when desired, and do work in any part of the country. Let us figure with you on one job, large or small. One trial will convince you.

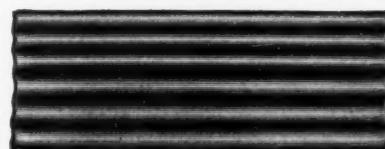
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Corrugated Iron Roofing

Galvanized and Painted



The Jersey City Galvanizing Co.

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To Prove to You the high, standardized construction and composition of Carey's Roofing, we want to send to you Booklet and Sample FREE and give you practical information regarding Carey's Roofing based on 25 years' actual time-proved tests. Carey's Roofing is equally adapted to flat or steep surfaces, wood-sheathing, tile or concrete. Whether your contract is large or small, we want to show you the advantage of using a standardized roofing material.

THE PHILIP CAREY MFG. CO.
58 Wayne Avenue 50 Branches Cincinnati, O.

"FAMOUS FOR DURABILITY"

oldest concerns in this field. They have been manufacturing gas engines for 32 years; and during that period have always kept up a standard of excellence that has placed them in the first rank. They have large factories in England, Austria, France, Denmark and Italy, all manufacturing under Otto patents. They have done everything possible to improve gas engines and they claim to have reached the highest point of efficiency possible. The material they use is the best that can be had and the wear is reduced to a minimum, thus greatly reducing the liability of the engine to get out of proper adjustment. Because of the large number of engines they turn out, they can buy in such large quantities that they can buy the best at a cheaper price than some of their competitors. Their engines are carefully tested in every detail before leaving their factory and the buyer is assured of a perfect engine. They claim that their product uses less gas than any other under actual working conditions, and claim to have proved this fact time after time with comparative tests. As these people have always been eager to try out any improvement claimed by any inventor they have several special distinctive features which are patented and exclusive to their product.

They are also builders of gasoline engines, suction gas producers, portable, traction and hoisting engines and railway appliances.

They advise us that they have just issued a fine new catalog which they will be pleased to mail out to anyone interested. You should certainly write for it if you are contemplating buying an engine.

Disston's Catalogue Out

Henry Disston & Sons, of Philadelphia, Pa., have just prepared for distribution, their new catalog for 1911, and will be pleased to send it to anyone interested in their goods.

It is one of the handsomest and most complete books ever published on saws and tools, and one well worthy to carry the message of Disston quality, which, for over seventy-one years has stood in the foremost ranks.

Because of the prominence of Disston saws, some people are under the impression that saws are all they manufacture, but this impression is erroneous, as they manufacture many other knives, cutters and tools, which are fully described in their catalog. This concern has always stood for quality as the first essential in manufacture and their large business has been built up on this principle. Write at once for a copy of this catalog, addressing Henry Disston & Sons, Philadelphia, Pa.

Otto Engine Works Under New Management

It will interest our readers to know that Mr. Frank Salomon has become president, and taken entire charge of the management of the Otto Gas Engine Works.

Since he took hold last year the entire works and offices have been re-organized, and put on a modern twentieth century basis. The result has already shown its advantages in the increased manufacturing facilities and greater output at less expense, enabling them to make a reduction in the selling cost of the engine, while retaining its high standard of excellence.

Mr. Salomon is now turning his attention to the selling organization, and in addition to the branch offices in Chicago, Boston, New York, Pittsburg, Omaha, Kansas City, Minneapolis and San Francisco, he is planning agencies to cover every square mile of territory throughout the country.

An extensive campaign of advertising is rapidly maturing and it is safe to predict that the Otto products will enjoy a wider sale than ever before.

OAK FLOORING



BUILDERS AND CONTRACTORS should always use OAK FLOORING. Your clients then will be satisfied. Any truthful landlord will tell you that OAK FLOORING **increases** the **renting** and **selling** values.

OAK FLOORING—the modern, sanitary, hygienic floor; cheaper than carpets. With an OAK FLOOR, your home is half furnished.

OAK FLOORING $\frac{3}{8}$ " thickness can be laid over old floors at a very low cost, without disturbing the woodwork of a room.

OAK FLOORING gives an air of **refinement** and **elegance** to a home. Is **rich** and **cheerful** in color.

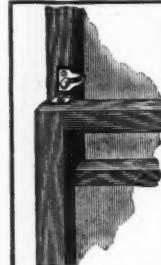
OAK FLOORING is made in four grades, and is adapted to the humblest of homes or a palace.

Use OAK FLOORING for **artistic**, **economical** and **durable** qualities.

Write us for further information.

THE OAK FLOORING BUREAU, 826 Hammond Bldg., Detroit, Mich.

The Ives Window Ventilating Lock.



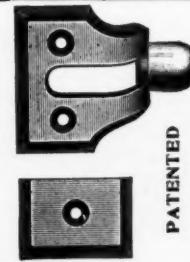
A Safeguard for Ventilating Rooms.
A Lock, quickly applied and operated.
Affording Sure Protection against Intruders.

CHILDREN KEPT IN.

—WRITE FOR DESCRIPTIVE CIRCULAR.—

THE H. B. IVES CO.,

NEW HAVEN, CONN., U. S. A.



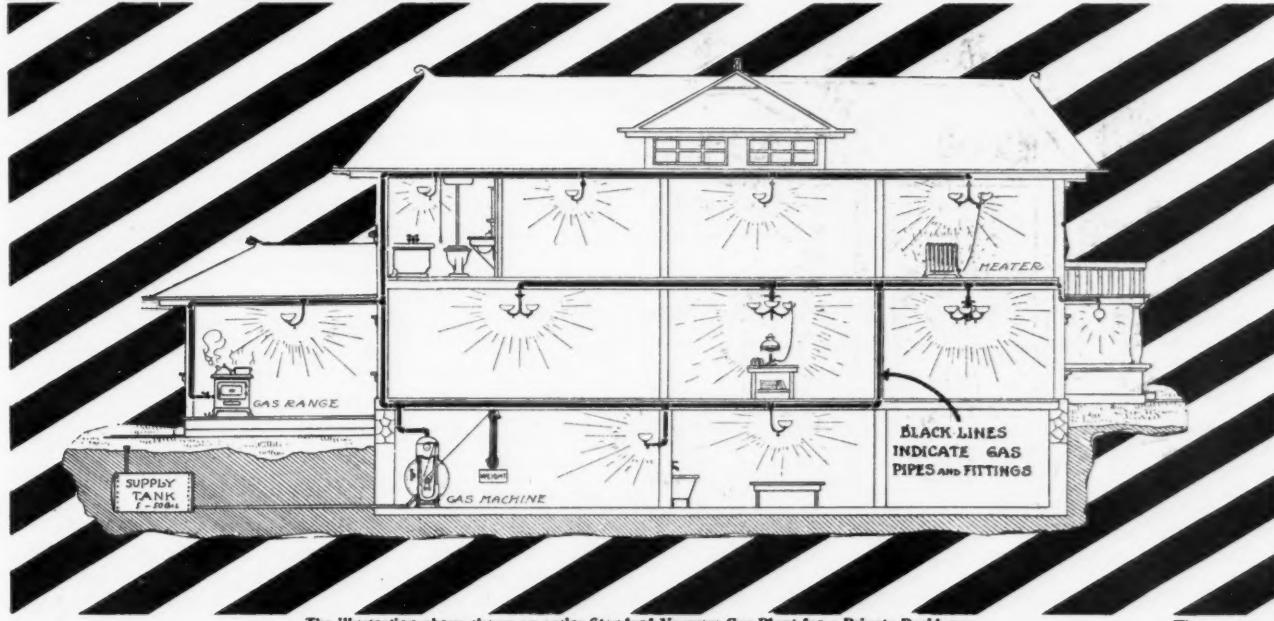
BURGLARS KEPT OUT.

AIRGAS—LATEST INVENTION

NOT EXPLOSIVE. NOT ASPHYXIATING.
NOT POISONOUS. NOT DANGEROUS.

ACME OF SIMPLICITY AND ECONOMY (1,000 Candle Power for One Hour for One Cent)

The Standard Vacuum Gas Machine has revolutionized Gas Production by means of a Vacuum Cold Process. Airgas can be used for Lighting, Heating, Cooking and Industrial Purposes. Airgas is made without the application of any heat and consists of 97 per cent of air that you breathe and 3 per cent of Gas. Machines are made in different sizes, for small homes, big residences, large buildings, or can be made to supply gas for entire towns up to 20,000 people. Gas made automatically throughout. No cleaning. No work filling machine. It runs itself. Uses Gasoline, Benzine or Naptha, also called Petrol, or Motor spirits of any grade. Standard Vacuum Airgas can be made for 15 cents per 1,000 cubic feet. 32 times cheaper than electricity, 25 times cheaper than acetylene. 12 times cheaper than common kerosene oil lamps and 10 times cheaper than Coal or City Gas. Machine make gas only when needed, otherwise stands idle. It is always ready. Gas produced instantly. No waiting. All conveniences of city gas, with none of its dangers and its disadvantages.



The illustration above shows an entire Standard Vacuum Gas Plant for a Private Residence

Agents Wanted: We want a representative in each town or community. Agents will be fully protected. No experience of any kind required. Plants can be delivered ready for any location and for any country or climate. Systems will last a lifetime. Always satisfactory. No trouble. No worry. Contractors & Builders visiting the coming Cement Show in Chicago are cordially invited to call on us where we have a Machine on demonstration.

THE STANDARD-GILLETT LIGHT COMPANY, 89 W. Michigan St. Largest Manufacturers of Cold Process, Hollow Wire and CHICAGO, ILL. Portable Hydrocarbon Lighting Devices. Write for particulars.

Huther Bros. Patent Groover or Dado Head

Will save its cost in three days' time



Showing Arrangement of Cutters
of concave ground, smooth cutting circular Mitre Saws, for either rip or cross cut; Grooving Saws for all kinds of special work; Lock, Corner Cutters, Concave Saws, etc.

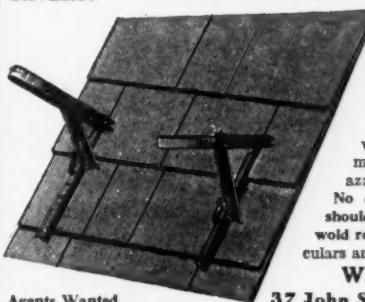
Try our Scraper Blades and you will use no others:
HUTHER BROS SAW MFG. CO.
1000 University Ave.

Can be used on
any Circular Saw
Mandrel

For cutting any
width groove from
 $\frac{1}{4}$ " to $\frac{1}{2}$ " or over.
Will cut a perfect
groove either with
or across the grain,
and leaves edges
smooth. Will ship
to any responsible
firm on ten days'
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are at liberty to
return at our ex-
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make a specialty
of concave ground,
smooth cutting circular
Mitre Saws, for either
rip or cross cut;
Grooving Saws for all
kinds of special work;
Lock, Corner Cutters,
Concave Saws, etc.

Griswold Adjustable Roofing Brackets

TIME, LABOR
AND MATERIAL
SAVERS.



Agents Wanted

For supporting stagings
for shingling, repairing
and painting roofs. Only
positively safe staging support
without nailing. Instantly
placed in position or removed.
Adjustable to any angle.
Made of steel, light and fold
to small space for packing.
They are particularly
convenient in working around
dormer windows, skylights and
pizza roofs.

No carpenter, builder or painter
should be without a supply of Gris-
wold roofing brackets. Send for cir-
culars and agents' proposition.

W. S. GRISWOLD
37 John St., Springfield, Mass.



SPECIAL INTRODUCTORY PROPOSITION

Reducing the Cost of Mixing Concrete One-Fourth

can be done by use of the Low-Down, Force Feed, Concrete Mixer. It feeds with absolute accuracy, sand, cement and crushed stone. The ingredients are forced into the mixing trough, wet or dry. It has a sight feed so that you can see at all times the proportions desired.

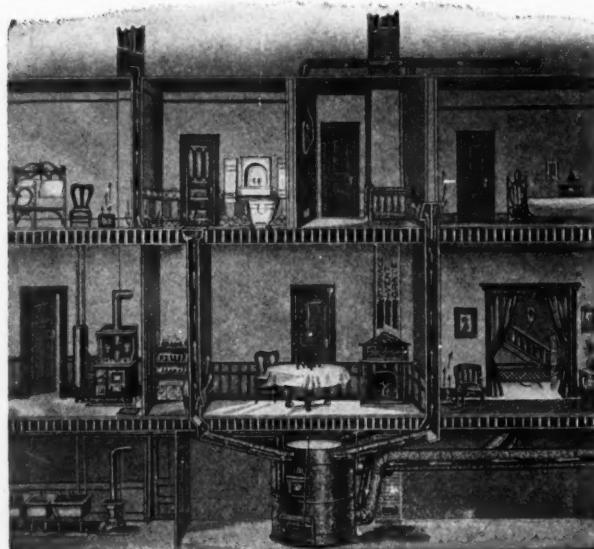
The paddles in the mixing trough are easily cleaned because they are not covered up with hoppers. The low-down hoppers enables one man to do the work of two. We do not depend on gravity to feed.

ELITE MFG. CO.

110 Ohio St.
ASHLAND, O.

Satisfactory House Warming

The accompanying illustration shows the inside of a house heated and ventilated by the Jewel warm-air furnace. It is claimed by the Detroit Stove Works of Detroit, Michigan, who manufacture these furnaces, that this system of heating is the kind that all people should use, as it gives a great volume



Residence Heated and Ventilated with the Jewel System

of heat at a low cost and supplies pure air for all the rooms in the house. They have just issued a catalog thoroughly explaining the principle upon which their system is based, which they will be glad to send to anyone who will write for it.

A Clever Booklet

We are informed that the latest number of The Revised American Statesman Series, written by Mr. Haskell of the Carborundum Co., Niagara Falls, N. Y., is off the press and ready for distribution. This number is Vol. III, and deals with the story of Captain John Smith. To our readers who have read any of this series it is unnecessary to make any comment, but to those who have not, we wish to say that they are very clever and well worth reading. These people are manufacturers of abrasive materials and will be pleased to send this booklet to all who will write them.

Maple, Beech and Birch Flooring Book

The Maple Flooring Manufacturers' Association, 1308 Rector building, Chicago, Ill., have gotten ready for distribution among architects, builders and other interested parties, one of the most artistic books it has ever been our pleasure to see, exploiting the use of maple, beech and birch for flooring purposes. It is printed on a highly calendered paper and the illustrations and color work are extremely fine. It is also full of very valuable reading matter presenting facts which everyone should know. If you will write them they will be pleased to send you a copy.

Pioneers in Wood Working Machinery

We are informed that the H. B. Smith Machine Co., of Smithville, N. J., is again going to increase their power plant and farther enlarge their manufacturing facilities in order to accommodate their many customers, and make prompt shipments. This concern started in the wood working machinery business in 1852 and the way they have kept up in the front rank, indicates the success they have justly had. One of

Carborundum Carpenters' Round Combination Bench Stone

You Can Use All of the Surface and Put a Clean Smooth Edge on Your Chisels, Plane Bits or Similar Tools—

Note the shape—round so as to give full play for rotary sharpening motion—There is no unused surface—The wear is uniform—Its use means a better edge in less time—Can be used dry or with Carborundum Temperoil, the oil that tempers the cut, smooths the edge, does not gum and has no acid.

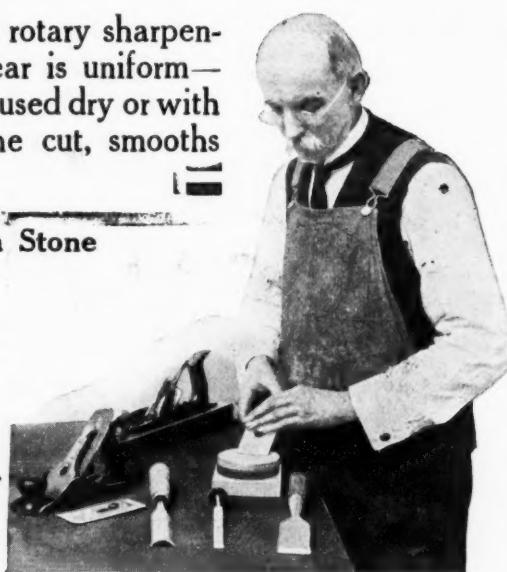
Carborundum Round Combination Bench Stone

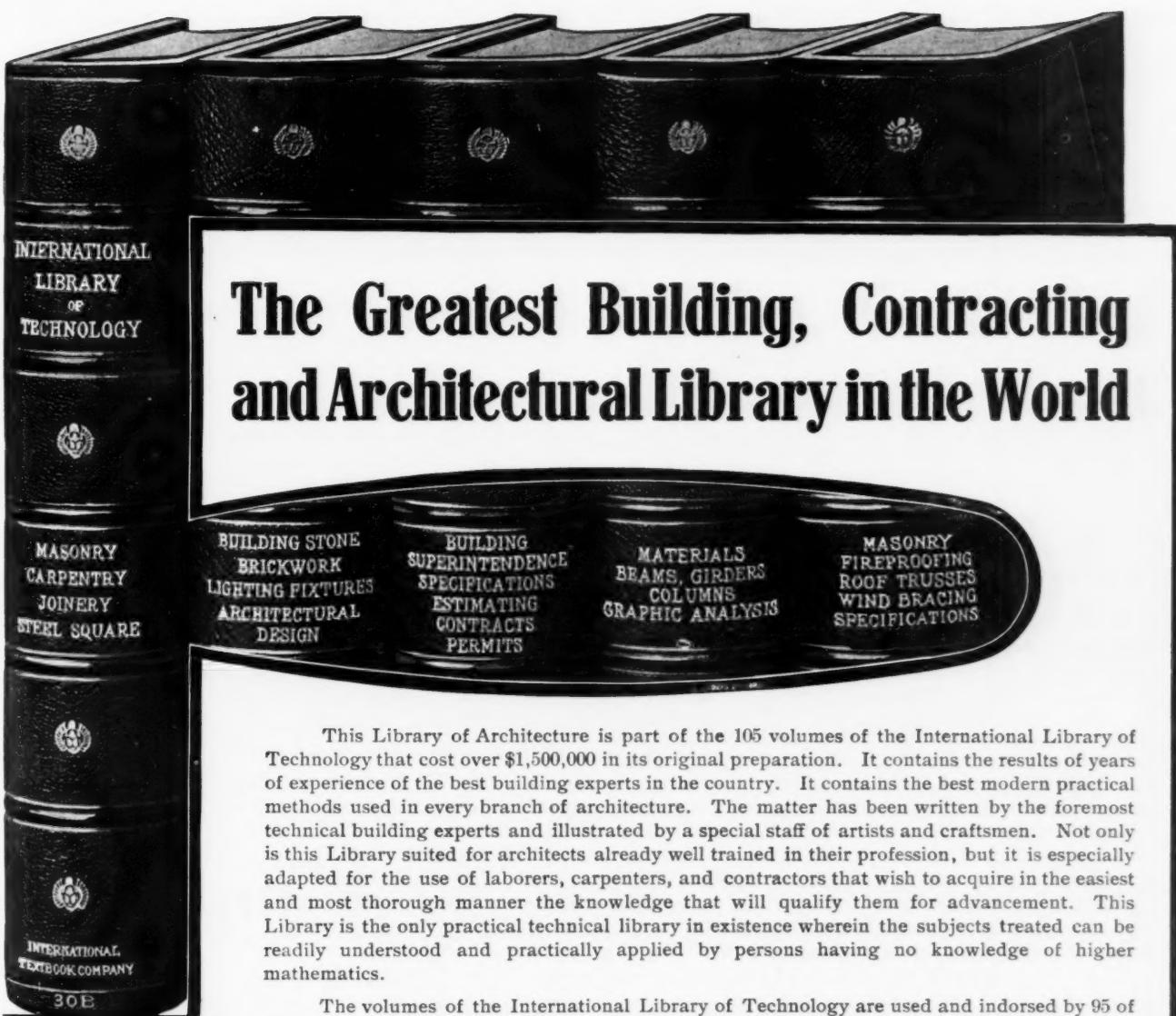
No. 107	\$1.00
With Quartered Oak Box Holder	1.50
Carborundum Pocket Stone in Case	.35
Carborundum Temperoil; 1½ ounce bottle	.10

All from your hardware dealer or by mail direct

The Carborundum Company

Niagara Falls, N. Y.





The Greatest Building, Contracting and Architectural Library in the World

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INTERNATIONAL TEXTBOOK COMPANY

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BUILDING STONE BRICKWORK LIGHTING FIXTURES ARCHITECTURAL DESIGN

BUILDING SUPERINTENDENCE SPECIFICATIONS ESTIMATING CONTRACTS PERMITS

MATERIALS BEAMS, GIRDERS COLUMNS GRAPHIC ANALYSIS

MASONRY FIREPROOFING ROOF TRUSSES WIND BRACING SPECIFICATIONS

This Library of Architecture is part of the 105 volumes of the International Library of Technology that cost over \$1,500,000 in its original preparation. It contains the results of years of experience of the best building experts in the country. It contains the best modern practical methods used in every branch of architecture. The matter has been written by the foremost technical building experts and illustrated by a special staff of artists and craftsmen. Not only is this Library suited for architects already well trained in their profession, but it is especially adapted for the use of laborers, carpenters, and contractors that wish to acquire in the easiest and most thorough manner the knowledge that will qualify them for advancement. This Library is the only practical technical library in existence wherein the subjects treated can be readily understood and practically applied by persons having no knowledge of higher mathematics.

The volumes of the International Library of Technology are used and indorsed by 95 of the leading colleges and universities throughout the country. They are also indorsed by leading engineers. An example of these indorsements is to be found in the statement of

Frank L. Mueller, Assistant Secretary of the O'Rourke Engineering Construction Company, of New York, who states: "Some time ago I received several volumes of your Library of Technology, and it will certainly give you pleasure to know what I think of these books. I have at my disposal a reference library containing more than one thousand engineering books, but I must say that none of these works contain the information generally desired in such concise and simple form as the volumes of your Library of Technology."

A partial list of the subjects contained in the Architectural Library is as follows: Excavating, Shoring, and Piling; Footings and Foundations; Areas, Vaults, and Retaining Walls; Cements; Concrete Construction; Stone Masonry; Stone Arches; Carpentry; Mechanics of Carpentry; Joinery; The Steel Square; Building Stone; Lathing, Plastering, and Tiling; Common Brickwork; Ornamental Brickwork and Terra Cotta; Lighting Fixtures; Use and Design of Lighting Fixtures; Architectural Design; Building Superintendence; Specification Writing; Specification-Writing Memoranda; Estimating and Calculating Quantities; Contracts; Permits; Fireproofing of Buildings; Stair Building; Ornamental Metal Work; Builders' Hardware; Roofing; Sheet-Metal Work; Mill Design; Loads in Structures; Properties of Sections; Materials of Structural Engineering; Beams and Girders; Columns and Struts; Details of Construction; Graphical Analysis of Stresses; Roof Trusses; Statics of Masonry; Heavy Foundations; Retaining Walls; Fireproofing; Roof-Truss Design; Wind Bracing; Specifications; Geometrical Drawing; Projection Drawing; Freehand and Ornamental Drawing; Wash Work and Brush Drawing; Elementary Perspective Drawing; Architectural Drawing; Painting and Interior Decoration; History of Architecture and Ornament.

There are 10 volumes in this Architectural Library, beautifully bound in three-fourths red morocco, stamped and numbered in gold, printed on a very high-grade book paper, and fully and practically illustrated. They may be purchased in sets of five or more volumes. Each volume is 6 x 9 inches in size. For full information,

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Please send, without further obligation to me, full particulars in regard to your Library of Technology, with special reference to the Architectural Library.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

the distinct and important features of their goods is the iron frame which is cast whole thus giving great strength. They absolutely guarantee their goods in every respect.

They have just issued a very fine catalog showing their various lines and will be pleased to mail it to anyone who will write for it.

Making a Cold Chisel

The ordinary cold chisel is not as an important tool in engineering shops as it once was, and the knack of making and tempering one properly is really little known. It takes some practice and the greatest care to get a chisel that will not chip, bend, or splinter. In the first place, one must be careful to get a piece of octagon steel that is made for the purpose. Round or square steel does not answer the purpose, and again, it must be a piece that has not been heated or burned before.

After cutting and drawing it out to the right shape it should be ground or filed to a bright surface before tempering, because on a smooth surface it is much easier to watch the color run down. The steel behind the cutting edge, moreover, should not be made too hard or the tool will break off an inch or so from the edge. Great care should be taken not to notch the chisel with a hammer or upon the anvil, for a notch is a flaw and the chisel may break at a notch at any time.

Heat the steel by thrusting it through the fire, so that the edge does not heat first, but gets its heat from the body of the tool and do not let it get red hot more than an inch from the edge. If the edge appears to be heating too rapidly, dip it in water and thrust it deeper into the fire. A file should be made ready with a piece of emery cloth wrapped around it to rub the surface when the chisel is taken from the fire, as time is most precious at this juncture.

When the steel is properly heated take it from the fire and hold it a quarter of an inch deep in the water, taking care to hold it steadily and firmly. Hold it there until the red is on the verge of disappearing and then, holding it in the left hand, rest it on the edge of the tub and rub briskly with the emery cloth until the color runs down to the edge and gives it a deep plum color verging into blue. In this way the steel back of the cutting edge will be soft and the edge will be hard enough to give satisfaction.

Science Brevities

Recent tests on the elevated roads in New York and the subway in Philadelphia, have demonstrated, says *The Electrical Review*, that saving in power of from twenty-five to thirty-five per cent can be accomplished by judicious coasting. On the Second Avenue line in New York a check is kept on the motorman by the installation of coasting-clocks which indicate what time of the total running time has been spent in coasting. This is hardly feasible or necessary on most surface lines, yet proper instructions to motormen, after proper training for the work, would undoubtedly result in an enormous saving of power.

The mud dredged from the bottom of San Francisco bay by the State Harbor Commission, says *The Engineering and Mining Journal*, is a soft, sticky, blue-black material and is almost like paint. It costs the Harbor Commission ten cents per cubic yard to dig and dump this mud into the deep waters of the bay. In the oil industry some good material has been needed to seal oil wells, line oil reservoirs, etc., and it is found that this bay mud is suited to this purpose. The mud is being taken from the slips and shipped to the oilfields, where it is being sold at \$120 per carload. The demand has exceeded the supply.

Concrete Mixers \$24 and Up

Every Builder, Contractor, Mason or Carpenter Ought To Own a Concrete Mixing Machine

Because there are dozens of different places about every building in which concrete is used, and a machine of this kind will pay for itself in a very short time. We illustrate herewith a simple but practical and speedy hand mixer, which is made in two different types and sells for \$24 and up. It is a mixer which will save from one to two men's time per day, and will turn out the very best quality of mix in the shortest possible time. It actually mixes a batch forty-five times in one minute.

We Manufacture Mixers of Every Style and At All Prices

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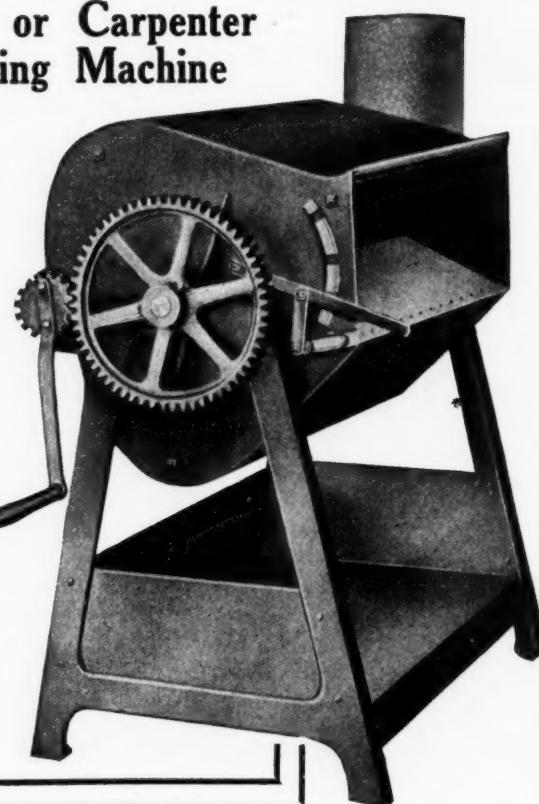
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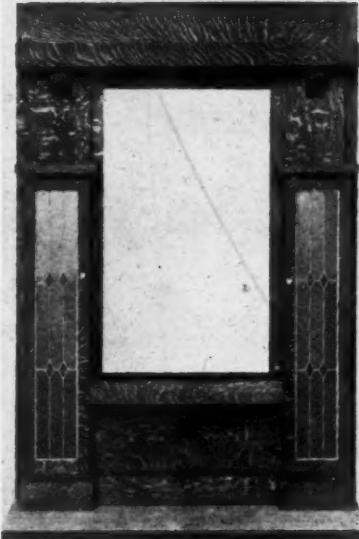
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Force and Velocity in Base Ball

Baseballs have been caught when dropped from the top of the Washington Monument, by at least two well-known league players. The distance dropped is 542 feet, and by the time the ball reached the catcher's hands its velocity was calculated to have been about 180 feet per second, or over 120 miles an hour. Suppose that the pitcher were to throw a 9-ounce ball to the top of the Washington Monument. How much energy would he require for that purpose. The *Scientific American* answers that question in a recent issue. According to that journal, if the pitcher could throw such a ball with such strength that it would reach the top of the monument, assuming that his hand is propelling the ball through a distance of 5 feet before letting go, he would have to exert a constant pressure of about 60 pounds upon the ball until it left his hand. If the catcher, in receiving the dropped ball, allowed his hands to move down a distance of 2 feet, the average stopping force which he exerted must have been nearly 150 pounds. The probabilities are that his hands stung somewhat after the performance.

Another Gyroscope Monorail System

For a type of railway that has never yet been put to practical commercial use, the gyroscope monorail seems to be doing pretty well. Besides the Brennan and Scherl systems, both of which have been described in these columns, there is now a third, the Schilpovsky, based on the same principles, but carried out differently. A reduced model, according to the *Literary Digest*, has recently been tested with success in London. Says this paper:

"The system has but one balancing gyroscope, which is carried on a sort of bogie truck placed between two cars.

The first car is a motor and carries a boiler furnishing steam to the engines that drive the car and to two others on the bogie, which together operate the gyroscope.

"The gyroscope, which is at one end of the bogie, is controlled directly by a small one-cylinder steam-engine running on a vertical axis in a frame carried by members turning about an axis perpendicular to the direction of the track. At the other extremity of the bogie is a heavy pendulum, swinging about a pivot parallel to the rail, and therefore hanging sometimes to the right, sometimes to the left, according to the inclination of the car. Its movement causes, by means of a motor connected to another small steam engine, a displacement of the gyroscope in the proper direction to maintain equilibrium."

Inlaying Wood with Pewter

There are two good ways of doing work of this kind. If the wood is thick and the work is to be done in a superior style, the grooves should be made with a slight undercut on each side. A depth of $\frac{1}{8}$ inch is sufficient, but it must be uniform and clean. Then melt the pewter in a ladle, and, stopping the run at regular and convenient distances, pour in the molten metal, and cool immediately with cold water or by passing a cold flat iron over it. There is some danger of charring the wood by this method if the metal is run too hot, or is not cooled immediately, but it gives the most satisfactory results if well done, and will wear for ages. The metal should be poured in to overflowing, and when cold filed down level with a rasp. An easier and more generally used method, especially for cheaper work, is to get thin sheet pewter, cut to the pattern, and fix it in the groove, which needs to be only very slightly undercut, and not so deep, with some cement, or special glue.

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Machinery Made of Muslin

Those who know that for years paper has been used in the manufacture of car-wheels will not be surprised at this heading. Any material of this sort, used for such a purpose, must, of course, be cemented, layer by layer, into a mass and consolidated by pressure. In a paper read before the National Machine Tool Builders' Association in New York recently, Mr. John Riddell tells of some noteworthy results that have been obtained with muslin gears and pinions which are not only very strong, but almost noiseless. This latter feature is of no small importance. The machine-shops of today are much noisier than those of ten or twenty years ago, owing to the fact that the machines for cutting and planing iron are run from three to six times as fast as formerly.

"These gear noises are very unfortunate, but we hope by improved machinery and the use of various other materials which have recently been introduced, that this trouble will gradually disappear.

"We have at the Schenectady works introduced gears and pinions made of a high grade of muslin which have been applied to a great variety of uses. We have used one of them on a boiler maker's punch and shear which previously gave considerable trouble, not only on account of noise, but in the actual breaking of the gears; due to excessive back lash and fly-wheel action on the machine. We had such wonderful success with that particular pinion, which has been running now some two years, that we gradually extended the use until now we are using them on two 10-foot planing-machines, which are operated by electric motors and compressed-air clutches, as intermediate pinions for the reverse motion. Heretofore we have tried various substitutes, including bronze, which would go to pieces in two or three weeks; steel would last longer but made an intolerable noise; rawhides would seem to shrink and burn out quickly, and we very seldom

could find anything that would stand the work longer than three or four weeks at the most."

Mr. Riddel goes on to describe an exhaustive test made with these cloth pinions in which so severe a shock was applied as to break nearly half the teeth in a gun-iron pinion, while the muslin pinions were uninjured. He concludes:

"I point this out to show the actual strength of pinions made of this material. So we have reason to believe that with time the noise in machine-shops will gradually disappear as they came, without, however, a corresponding reduction in output."

A Successful Skunk Farm

An exchange tells of a hustling young Indiana man who has made a success of a rather unusual business. Three years ago he purchased a few acres of land unfitted for cultivation and proceeded to business. A lot containing 1½ acres was fenced with wire fencing. A trench 1½ feet deep was dug around the tract and the fencing set in it to prevent burrowing.

Necessary coops and shelters were provided and the live skunks that he secured were introduced to their new homes. There are now in the yards over 2,000 animals. They require but little attention other than the feeding, which is done regularly.

The animals are not slaughtered until they reach full size and are fat. The hides bring an average of \$1 each and the oil is in good demand at \$1 per gallon. Special tanks for steaming the carcasses are used.

The females are very prolific, from five to 11 being given at a birth. These are kept separated until the young can care for themselves. In their quarters they are quite tame, and soon become familiar with persons around the pens. Unless molested they give offense to no one.

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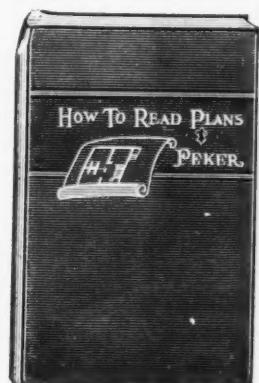
It is for these men that this book was prepared, as it simply explains the meaning of the various lines; plans, views, elevations, sections, scales, blue prints, devices, symbols, etc., to be found on a set of plans.

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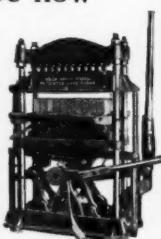
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It is not difficult to bleach any of these materials and make them beautifully white, but the trouble with most bleaching recipes is that the ingredients used destroy or greatly weaken the texture of the material to which they are applied. This is very apt to be the case when chlorine, caustic alkalies or sulphurous acid is used. Of course, for common work these bleaching agents serve very well, as they are quite cheap, they are used extensively, but for delicate work, such as piano keys, etc., peroxide of hydrogen is greatly to be preferred. It does not injure the material to which it is applied, and it gives excellent results. It is now manufactured so extensively that the price is quite moderate.

Fluxes for the Brass Foundry

In a paper read at the Detroit meeting of the American Brass Foundrymen's Association, June, 1910, Irwin S. Sperry discussed the advantages of fluxes used in the melting of various metals in the brass foundry.

For aluminum the most extensively used and valuable flux is chloride of zinc. It reacts with the aluminum to form chloride of aluminum and metallic zinc, the latter alloying with aluminum. In using it, small pieces are thrown on the surface after the melting is complete. When the surface is clear, enough has been added. For fifty pounds of aluminum a piece of chloride of zinc about the size of a walnut is sufficient.

A good flux for nickel is composed of lime three parts, and fluorspar one part. It is made by slaking the lime, and then stirring in the fluorspar and allowing it to become solid. The fluorspar alone is a good flux, but rapidly attacks the crucible.

In the selection of a flux for copper it should be known whether pure copper castings are to be made or whether the copper is to be alloyed to make brass or bronze. To make sound copper castings with a flux alone, yellow prussiate of potash (potassium ferrocyanide) is excellent. Better results, however, may be obtained by the usual deoxidizing agents, such as silicon-copper, magnesium, phosphorus, etc. In melting copper for producing brass and bronze, the best flux is common salt. It possesses the property of reducing any oxide of copper which may form during melting. About a handful of salt is used for 150 pounds, and is preferably added after the copper has begun to melt. If introduced with the copper it melts before it, and will be volatilized and wasted.

Common salt is also almost exclusively used as a flux for brass melting, its action being similar to that on copper. It is used in about the same proportion as for copper. The above applies equally well to the melting of composition metals or bronzes. It makes no difference whether phosphorus or other deoxidizing agents are used; salt is used also.

The World's Aeroplane Factory*

France seems to have gone into the aeroplane business in earnest. She is making them, not one or two, here and there, for experimentation or racing, but in quantity, on a commercial scale. She cares not who invents, so long as she can supply the world's markets. Some idea of how far beyond the experimental stage the manufacture of French aeroplanes has progressed may be gained from the facts, noted by Warren H. Miller in an article in *The Engineering Magazine*, that Bleriot has just sold his 250th machine, that Farman, Sommer, Antoinette and Voisin have 20 to 50 apiece on their books, and that all issue handsomely illustrated catalogues of standard types and sizes. Each house, too, has its school, with a director and staff of pilots; and the number of enrolled pupils and recent graduates of these exceeds 400.



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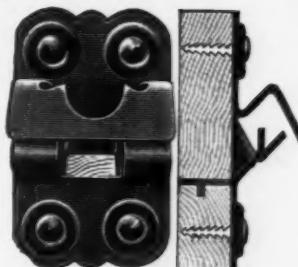
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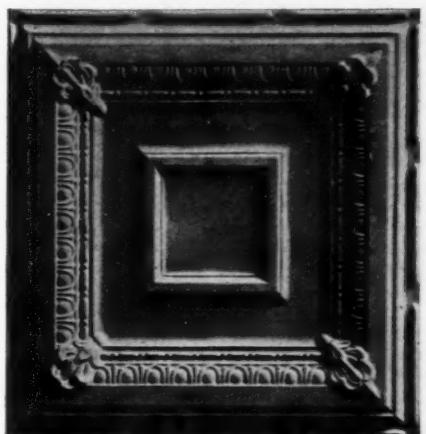
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A Substitute for Linseed Oil

It is now believed that the oil of the rubber seed will in time be a remarkable product and develop a profitable business in the Malay States. Consul-General, James T. Dubois, of Singapore, who writes to the State Department to this effect, is thus quoted in *The Scientific American Supplement*.

"At present there is such a demand for the Hevea seeds for planting purposes that the supply does not equal the demand. This office has received a request for 5,000 Para seeds to be shipped to the Philippine Islands, but the order cannot be filled until next October or November. The Botanic gardens at Singapore, which is really the birthplace of the rubber industry in Malaysia, and which has furnished great quantities of seeds to the plantations, reports that it will not be able to furnish another 5,000 order of rubber seeds before next spring, owing to the many orders already booked. So rubber-seed oil is out of the question at present.

"The time is coming when there will be a large surplus of seeds from the 90,000,000 of trees already planted in the far East, and then the rubber-seed oil will have its day and its valuable market. It is now suggested by experts that, owing to the future commercial value of rubber-seed oil and the residue obtainable from local treatment, it would be wise in erecting new machinery on plantations or remodeling old machinery to make provision for power and space for the convenient placing of the rubber-seed crushing machines. This would leave the residue on the estates, which, it is be-

lieved by experts, will prove good for cattle food, as well as a valuable fertilizer. Scientific investigations of the Hevea seed have proved that they yield a fine, clear oil of good drying quality, not inferior to the best linseed oil."

The Increasing Size of Steamships

When the Lusitania and Mauretania were under construction they were widely known as "the new Cunards," and as such they represent today the most splendid realization of mercantile naval architecture. But they are only 760 feet

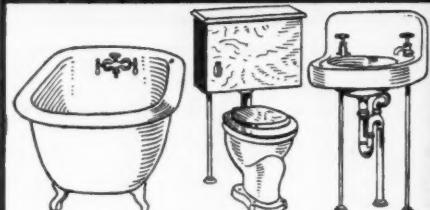
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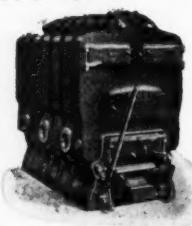
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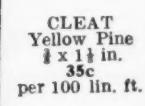


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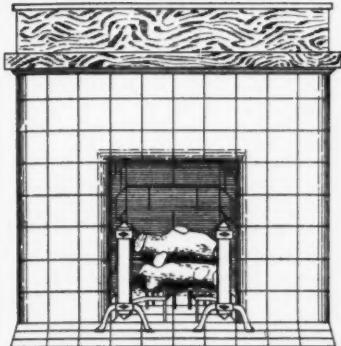
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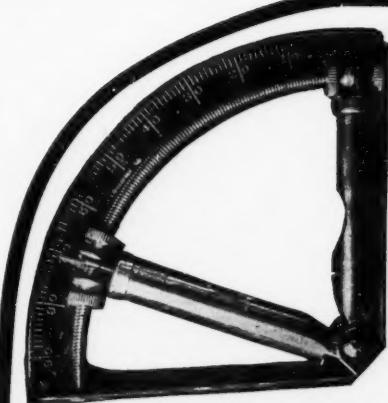
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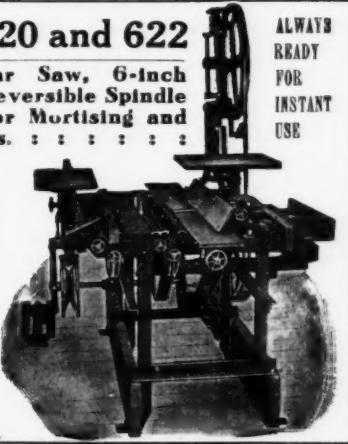
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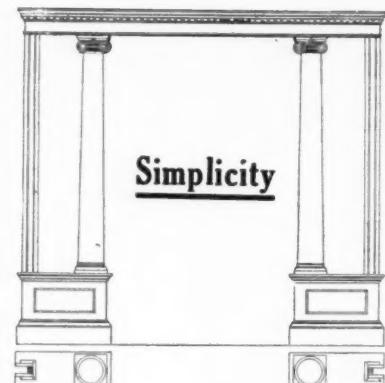
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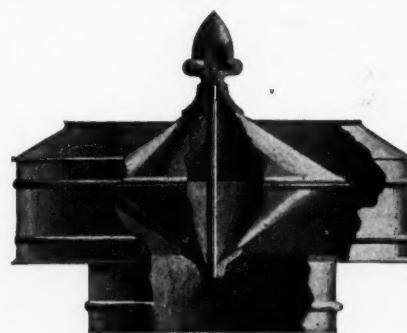
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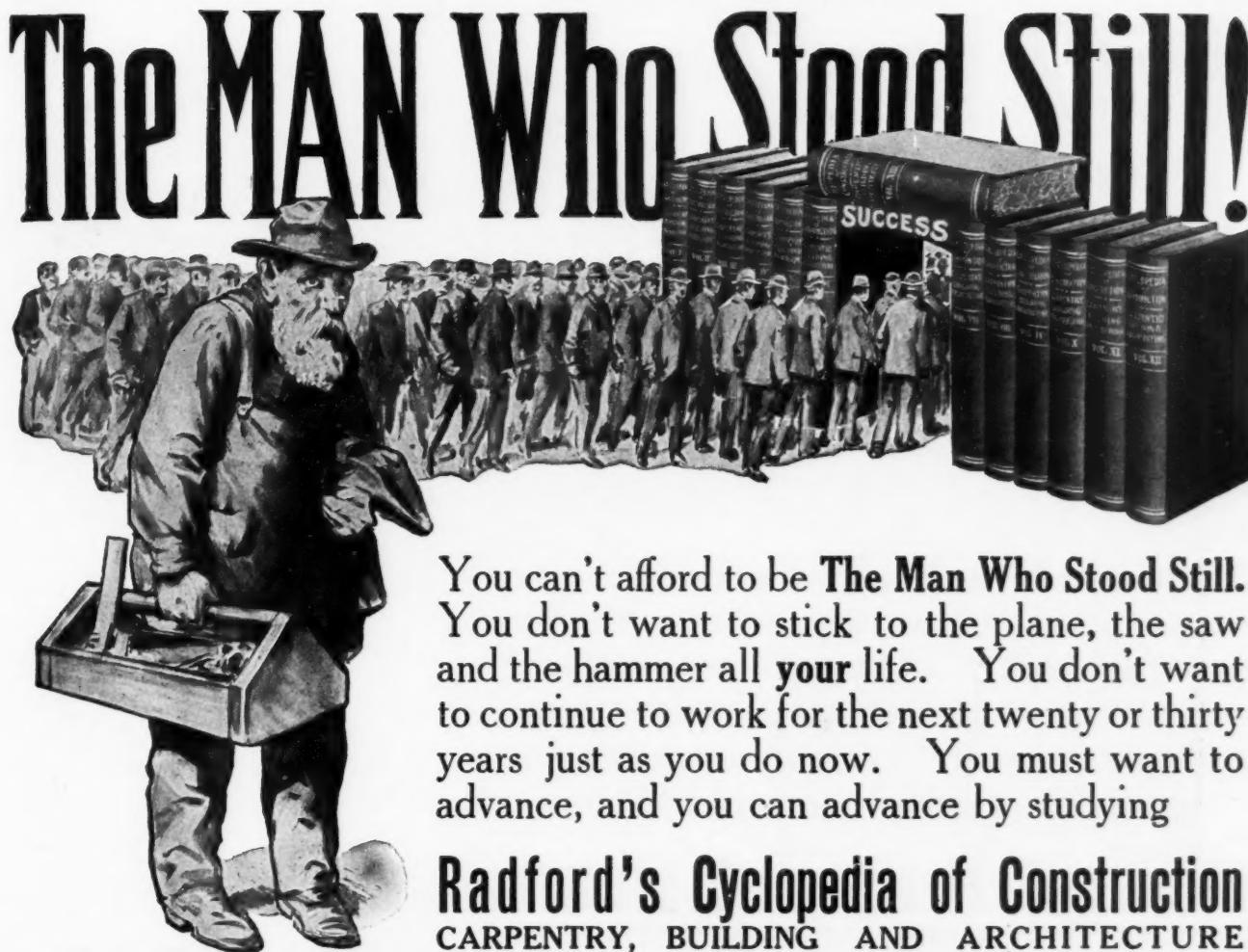
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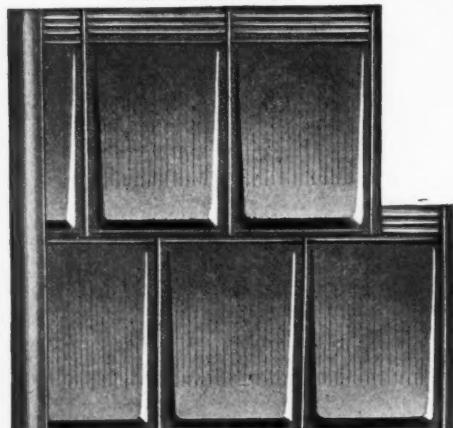
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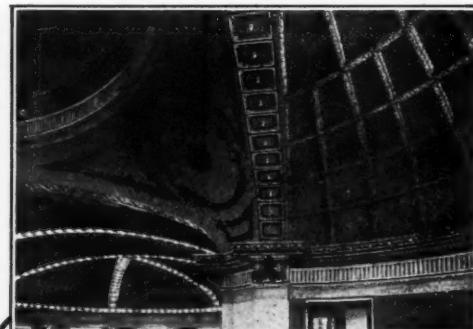
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**An Expensive Theatre Interior
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a church, a school, a residence—any type of building and any style of architecture can be furnished with an appropriately designed ceiling and wall covering from



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**MONITOR
SASH LOCKS**



(PATENTED)

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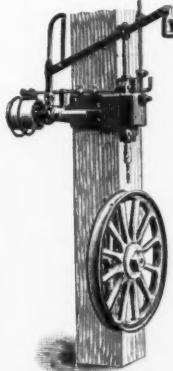
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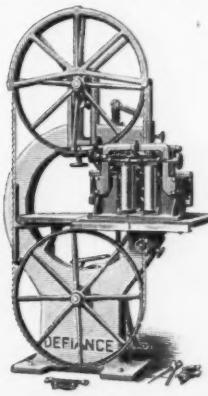


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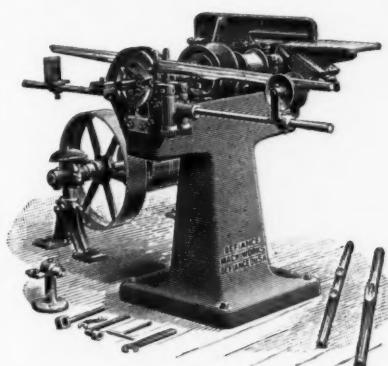


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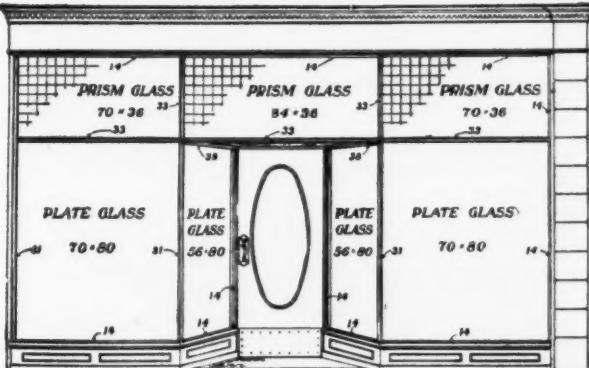
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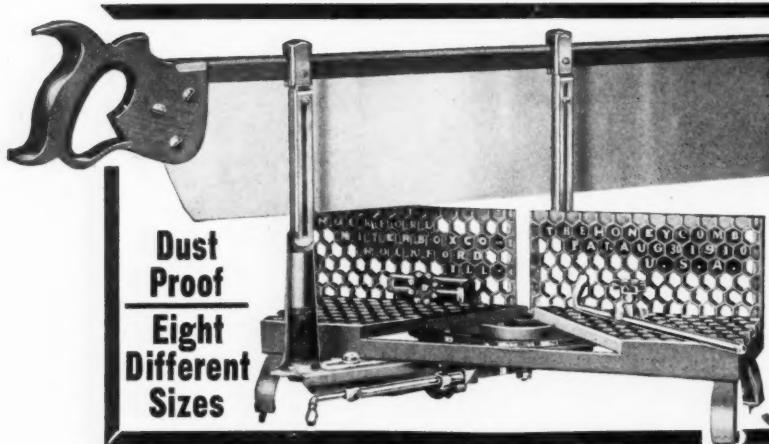
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Trinidad Lake Asphalt
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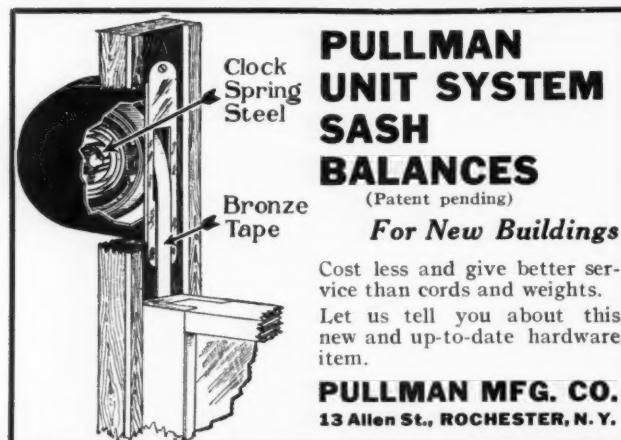
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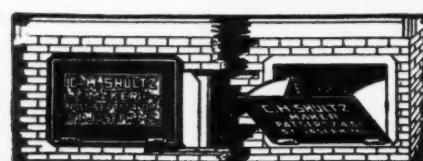


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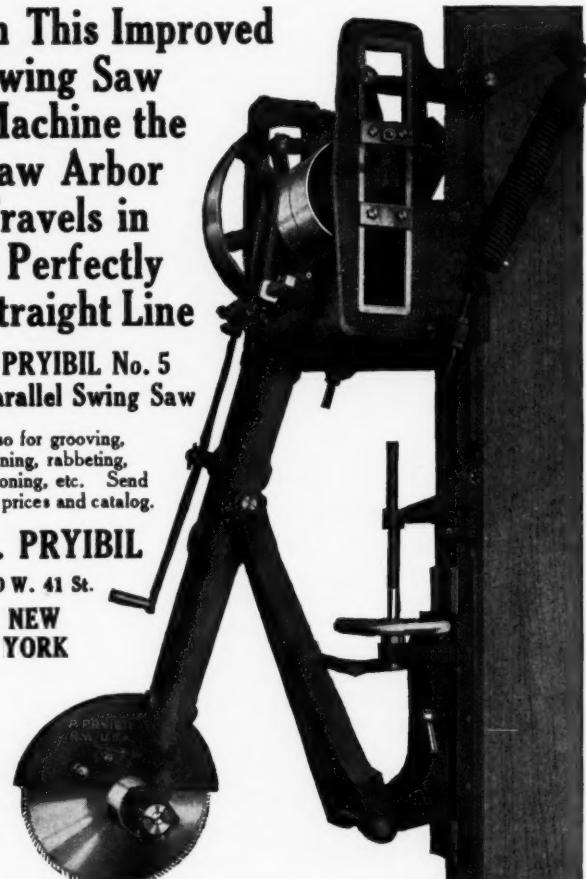
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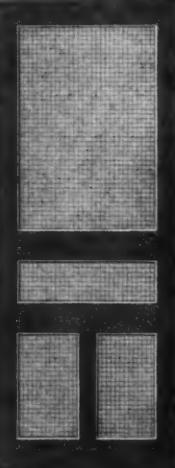
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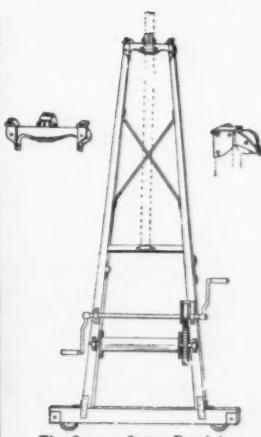
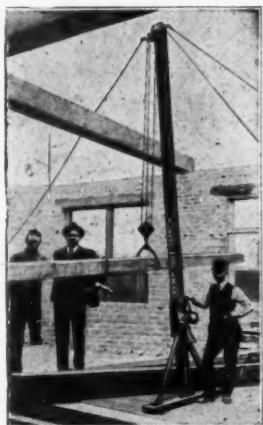
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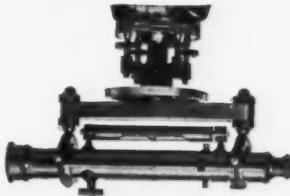
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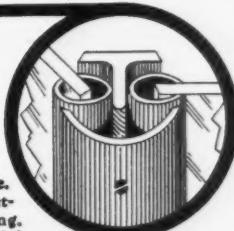
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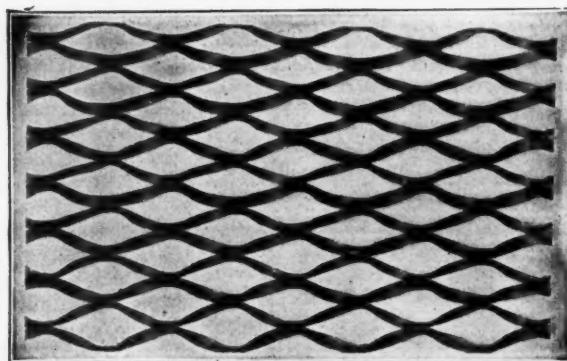
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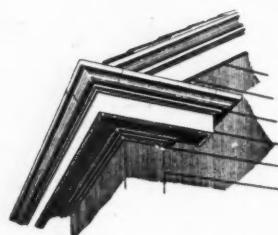
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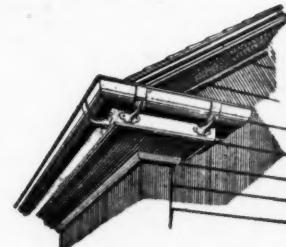
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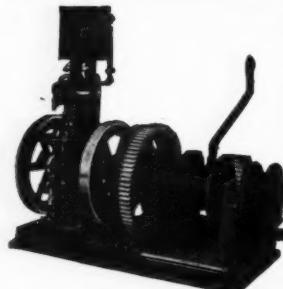


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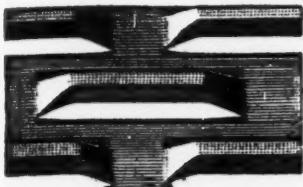
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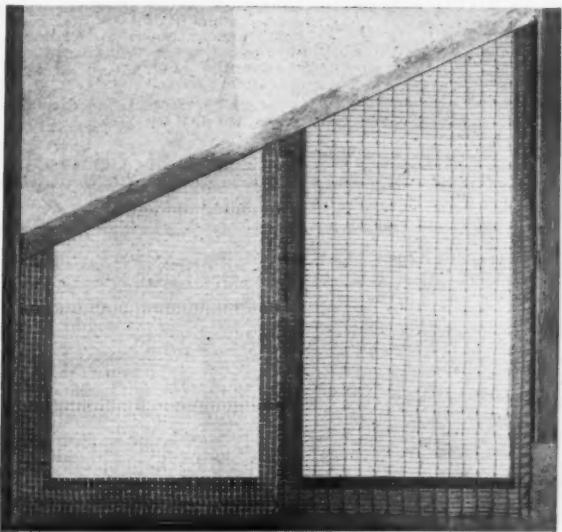


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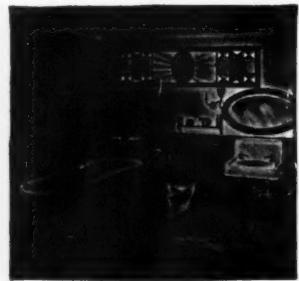
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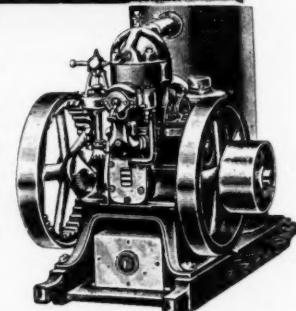
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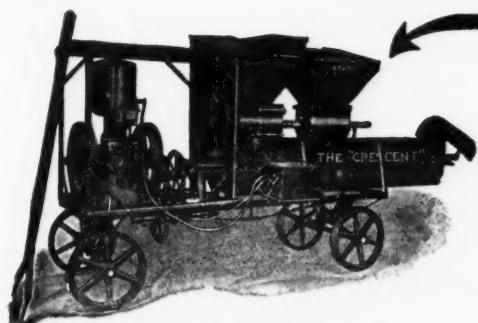
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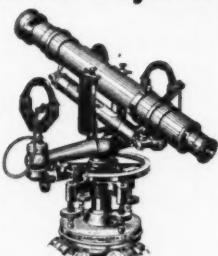
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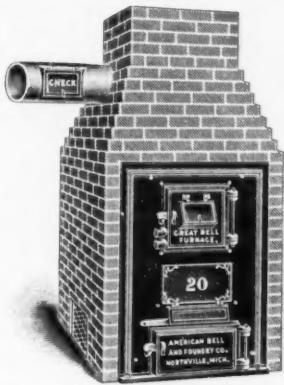
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or locker, finished in snow-white, baked everlasting enamel, inside and out. Beautiful beveled mirror door. Nickel plate brass trimmings. Steel or glass shelves.

Costs Less Than Wood

Never warps, shrinks nor
swells. Dust and vermin
proof, easily cleaned.

Should be in Every Bath Room
Four styles—four sizes. To recess
in wall or to hang outside. Send
for illustrated circular.

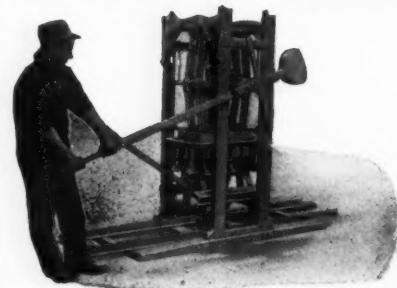


HESS, 920L Tacoma Bldg., CHICAGO

Makers of Steel Furnaces Free Booklet

The Outside Steel Cabinet

PRESSURE means PROGRESS



BE PROGRESSIVE

MORE Blocks,

BETTER Blocks,

CHEAPER Blocks,

can be made by the use of the

Somers Pressure Machine

than by any other known method. We substantiate every claim—others don't. Drop us a card and we will send literature.

SOMERS BROS., URBANA, ILL.

SARGENT'S

IMPROVED STEEL SQUARE

The difference between good and indifferent Carpenters' Squares lies in something more than excellence of material and workmanship, which are, of course, among other "Sargent" features—it is in the qualities that increase its all-round efficiency. That is why the practical "Sargent" Standard Steel Square is the universal favorite wherever Squares are used. Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. "A practical treatise on Steel Square" little publication. Copy free simply by mentioning you saw this ad in the American Carpenter and Builder.

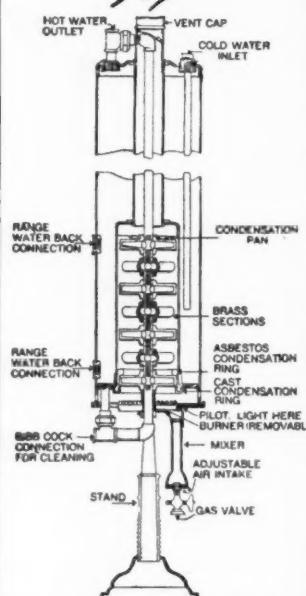
1149 Leonard Street

Sargent & Company

New York

Electric Weld

Combination Boiler and Gas Water Heater



JOHN WOOD MFG. CO.
CONSHOHOCKEN, PA.

Branches Throughout United States

The self-contained storage system.

Illustration shows arrangement of enclosed Heating Chamber, Vent, and parts.

The advantages of this Type are many, in addition to the maximum efficiency thus obtained.

Adapted to Large or Small requirements, without change in design of fixture or method of installing.

Widest choice as to location of fixture.

Economy of space.

Absence of delicate or intricate parts.

No special Meters or Service pipes required.

Lowest possible maintenance cost.

Moderate initial cost.

Minimum cost of operation (service considered.)

Double Circulation.

Primary Circulation equal to other types.

Secondary Circulation equal to thirty-five per cent. of total efficiency—altogether absent in other types.

Automatic or Intermittent Service optional, without adjustment of parts or breaking connections.

Ridge or Furnace Connections provided for.

Auxiliary Steam Coil, for High or Low Steam Pressure, if desired.

This type represents one-twentieth of total number of Gas Water Heaters in service, and is essential if water heaters are to be popularized.

This is the inner radiator of the

HESS STEEL FURNACE

It's all steel and contains the fire, with its gas, smoke and dust. Radiator leakage in other furnaces sends gas and dust to the rooms, but never in the **HESS**. for every joint and seam in a **HESS** radiator is sealed tight

WITH MELTED STEEL.

EVERY JOINT IS WELDED AND STAYS TIGHT FOREVER

Inferior furnaces are not built that way. Cemented radiators always open after a while and give trouble. It's impossible with the **HESS**

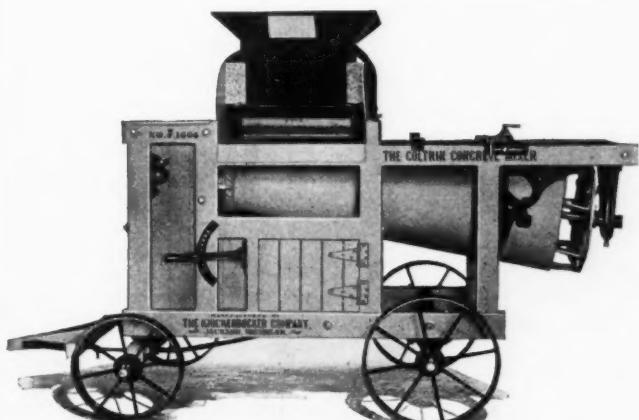
HESS  **FURNACE**

You can buy our furnace direct from our factory, at the factory price, and test it 60 days in winter weather. If not pleased, return it at our expense for freight both ways and pay us nothing. This offer and lots of good furnace information will be found in our free 48-page furnace booklet. Ask us for one. A postal card will do.

HESS, 916 Tacoma Bldg.

CHICAGO

"Have used several leading makes and regard the Coltrin the Best"



No. 7 Coltrin—Capacity 4 to 6 Cubic Yards Per Hour

BOULDER, COLO., April 4, 1911.

Cement Machinery Co.,
Denver, Colo.

Gentlemen:—

Regarding the Coltrin Mixer I bought of you one year ago, will say I am perfectly satisfied. It is all and more than you claimed for it.

I have used several leading makes and regard the Coltrin the best for sidewalks, curb and gutter and similar work.

Wishing you success, I am,

Yours Truly,

JACOB BLOSSER. ■

The Coltrin Concrete Mixers
SIZES 7 SIZES

Shipped anywhere in UNITED STATES on five days trial

Manufactured Exclusively By

THE KNICKERBOCKER CO., - JACKSON, MICHIGAN

WRITE FOR 1911 CATALOG!



Mr. Block-Maker

Wet Process is Right.
Face down is Right.
Three blocks at a time is Right.
Triple Tiering is Right.
Damp Curing is Right.

The Mogul Invincible Block Machine

COMBINES ALL THESE
IT IS RIGHT

It is 46 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

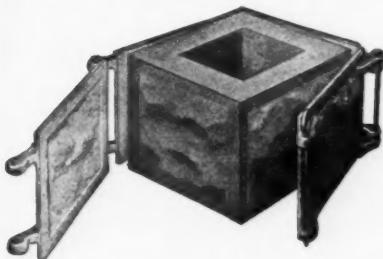
PRICE—Machine and Outfit, \$75.00

WRITE FOR CATALOG

THE PETTYJOHN COMPANY
634 No. 6th St., TERRE HAUTE, IND.

Try Them

And Then—
Buy Them



Twenty One
Sizes for
\$25.00

You'll be surprised and pleased to see the number of different sized blocks you can make and the number of places that you can use these molds. Every size can be made from 8x8 to 20x20". You ought to have these molds in your business.

Send for a Catalogue

It gives all the different combinations of blocks that can be made and tells all about the different sizes. There is information in this catalogue that you ought to have and you ought to know all of the different things that these molds will do.

Send at once—To-night—Don't forget or overlook it

W.F. Dunn Mfg. Co.
4132 FILMORE ST. CHICAGO, ILL.

Hercules Concrete Block Machines

THE OLDEST AND BEST ESTABLISHED MACHINES IN THE WORLD

Meet every requirement where Concrete Blocks are used. They expand to meet the demand of every Contractor and Builder. They give unlimited variety both in sizes and designs. The output of ONE Hercules exceeds the combined production of from two to four machines of other makes. Two blocks can be made at one time if desired.

The only machine that will produce any size of Water Table, Sill or Lintel up to six feet long, in addition to any and every size, style, or design of building block. Stone can be produced one or two at a time, as desired. Blocks are made face down, allowing fine mixture for facing and coarse mixture for backing. This gives fine outside finish combined with strength and durability. The use of a coarse backing also makes a great saving in cement.

Successful Builders and Manufacturers of Concrete Blocks the World over recognize the superiority of Blocks made on

HERCULES BLOCK MACHINES

They are used everywhere—by the U. S. Government, by the British Government, by the leading Contractors and Builders in all parts of the world. HERCULES MACHINES are simple in construction and easy to operate—all parts are perfectly machined and interchangeable. All Rock Face Designs are taken direct from cut stone.

Blocks Can Be Made Better Because—A special fine facing mixture can be used for face of every block, combined with a coarse wet mixture for the back.

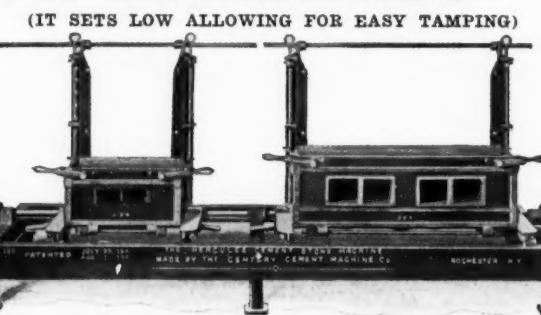
Blocks Can Be Made Faster Because—From Two to Four Blocks can be made at ONE time.

Blocks Can Be Made Cheaper Because—Crushed stone or coarse gravel can be used, all of which SAVES CEMENT and at the same time increases the strength and durability of the block.

HERCULES MACHINES ARE UNLIMITED AS TO PRODUCTION—they make all sizes from 3 inches to 6 feet long.

HERCULES MACHINES are in a class by themselves—it will pay you to investigate. Send for large illustrated catalog today.

CENTURY CEMENT MACHINE COMPANY, 290-300 St. Paul St., ROCHESTER, N.Y., U.S.A.



The Peerless Brick Machine

has been proven times without number to be

The most
SUCCESSFUL and
ECONOMICAL
MACHINE

The Peerless tamps (does not press) every brick and will turn out 12,000 perfect bricks in 10 hours, making 10 bricks at each operation.

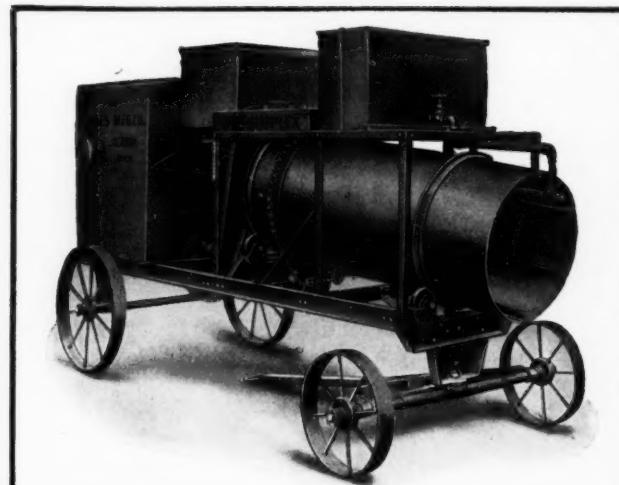
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A
DEALER IN
CEMENT?
MAKER OF CE-
MENT BLOCKS?
CONTRACTOR
OR BUILDER?

If you are, our machine will appeal to you, as it makes perfect brick at minimum cost.

OUR 1910 MODEL IS A WONDER

Write us so we can tell you more about it

Peerless Brick Machine Co.
19 North Sixth Street : Minneapolis, Minn.



THE MILES SIMPLEX MIXER

Continuous Feed, Batch Mix, Low Down Steel Frame, 3 Hoppers, Positive Feed, Attractive Price

"The Miles" No. 5, Down Face, Wet Concrete Block Machine

Makes Stone in Lengths, 4', 6', 8', 10', 12', 16', 18', 20', 22', 24'; in Width, 4', 6', 8', 10', 12'; in Height, 4', 6', 8'. Also Angle Stone, Circle Stone, Gable Stone, Hollow or Solid Stone. The Contractor's Friend, Simple, Strong and Rapid. Lowest in price.

WRITE FOR NEW 1911 CATALOGUE

THE MILES MFG. CO., Inc. 309 E. Franklin St., JACKSON, MICHIGAN

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NOTICE TO ADVERTISERS

Forms for the June number of the American Carpenter and Builder will close promptly on May 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 178 West Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER CO.

BISHOPRIC WALL BOARD AND SHEATHING

ANY WEATHER is "Good Building Weather" when you use *Bishopric Wall Board* as a substitute for lath and plaster. It is cheaper and better and does away with all delays in building. It is nailed to studding dry, ready for immediate application of paper, paint, burlap, or any other kind of decoration.

FOR WALLS AND CEILINGS



*Bishopric Wall Board
Easily Applied*

This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic surfaced with sized cardboard and cut at the factory into 4x4 feet sheets, which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap, or other decoration. The laths imbedded in *Bishopric Wall Board* give it wall strength, a guarantee against warping.

It is applied dry, is guaranteed not to swell, shrink, warp, crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat, and vermin; saves fuel in winter and keeps out summer heat; also deadens sound.



Applied Dry
Winter or
Summer

Shows Construction of Bishopric Wall Board

It is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

PRICE OF WALL BOARD AND SHIPMENT—Crate of 16 sheets, covering 256 sq. ft. of surface, \$6.40 per crate, or \$2.50 per 100 sq. ft., f. o. b. New Orleans, Cincinnati, or Alma, Mich. We ship from nearest point.

*Bishopric Sheathing is
Cheaper than Lumber;
saves 75% in Labor; does
away with Building Paper*

BISHOPRIC SHEATHING

*Ideal Material for Cement
Buildings or Stucco Ex-
terior. Proof against
Dampness, Heat and Cold*

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied.

Bishopric Sheathing is nailed to studs, with lath and asphalt side exposed. Over laths weather boards are nailed or cement applied.

Bishopric Sheathing makes a more solid and substantial wall than lumber. There are no gaping joints; no widening cracks due to shrinkage; no knot holes.

The Asphalt Mastic in *Bishopric Sheathing* is a non-conductor, moisture cannot penetrate it. It is proof against vermin. The pests cannot bore through the tough, gummy Asphalt Mastic. In applying weather-boards over laths, dead air space is left between the laths; forming splendid insulation. Does away with the expense of building paper and cost of its application.

One wagon load of *Bishopric Sheathing* covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. Five thousand feet can be hauled in an ordinary wagon.

*An Ideal
Bishopric
Home*



Ideal home showing Weather-boards over Bishopric Sheathing, lath side exposed, also Bishopric Roofing over Bishopric Sheathing. (smooth side of sheathing exposed)

The cost of applying *Bishopric Sheathing* is but \$2.50 per 1,000 feet—A SAVING OF ABOUT 75 PER CENT. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In *Bishopric Sheathing* 1000 sq. ft. covers 1000 square feet of space.

Write for Descriptive Booklet and Samples—all Sent FREE. Dealers Write for Proposition.

THE MASTIC WALL BOARD AND ROOFING MFG. CO., 24 E. Third St. Cincinnati, O.

In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor space are required. In applying *Bishopric Sheathing*, one man drives a few nails in each sheet; a common laborer or boy can finish the nailing.

Bishopric Sheathing insures comfort during the construction of the building. As soon as the building is closed in with *Bishopric Sheathing*, the men may work in comfort on the inside during bad weather, finishing the outside on suitable days. This insures continuous work, without loss of time, enabling the contractor to hold his men and complete the work in the least possible time.

Bishopric Sheathing is used with equally splendid results under flooring and as a substitute for roofing boards. Used under floors, it serves as a sound deadener and keeps out dampness; used under the shingles, it keeps out cold and summer heat.

ITS MANY USES—*Bishopric Sheathing* also is used with excellent results as a lining for dairy barns, ranch houses, poultry houses, driving stables or any out-door building where protection from the elements, Summer or Winter is desired.

Bishopric Sheathing is the ideal material for cement exterior or stucco work. Cement firmly adheres to the laths and Asphalt Mastic and makes a solid, smooth exterior. For factory or residence this form of concrete or stucco construction is the cheapest and best known.

PRICE OF SHEATHING AND SHIPMENT—Crate of 16 sheets, covering 256 square feet of surface, \$6, or \$2.35 per square of 100 square feet, f. o. b. New Orleans, La., Cincinnati, or Alma, Mich. We ship from nearest point.

BISHOPRIC ROOFING SELF-PROTECTING

The materials used in *Bishopric Roofing* are self-protecting. Other roofs require protection in the way of paint or coatings to prevent drying out, cracking or rotting. *Bishopric Roofing* requires no paint. The Asphalt itself in this patented Roofing is toughened and perpetuated by an exclusive process. Carbonate of Lime is mixed with pure asphalt, making one homogeneous mixture, which stands a pressure of 500 pounds to the square inch. This is a positive guarantee against breaks and cracks. Asphalt Mastic may be exposed direct to the weather in any climate without danger of softening, drying out, cracking or crumbling. Write for free sample and literature.





This is your kind of a Safety Razor

IF you will examine the Keen Kutter Safety Razor critically, you will agree that it ought to make good from *your* point of view. Note the slant of the head. See how finely it is adjusted for the *natural* shaving motion, the diagonal cutting stroke. This principle was thought out, worked out, *tried out*, and found perfect, *before* a single Keen Kutter Safety Razor was sold. No mistakes were left for *you* to discover.

The Keen Kutter blade (best Norwegian Steel) is strong, firm and highly tempered. The temper is even, the edge true. It is as thick and as thin as it *ought* to be to *hold* its edge, and cut the toughest beard without harm to the tenderest skin. Never pulls, never scrapes, never goes wrong.

KEEN KUTTER

Safety Razors are like all other Keen Kutter edge tools, in quality of material and workmanship—guaranteed for service and efficiency—or your money back without a quibble. You'll get a quick, clean, luxurious shave the *first* time with a Keen Kutter.

No. K-1—Silver-Plated—\$3.50
No. K-3—Gold-Plated—\$5.00
No. K-2—Silver-Plated Traveling Set—\$6.50
No. K-4—Gold-Plated Traveling Set—\$12.00
No. K-5—Silver-Plated Take-Down—\$3.50
No. K-6—Gold-Plated Take-Down—\$5.00
No. KJ-10-N—Nickel-Plated—Junior—\$1.00

*"The Recollection of Quality
Remains Long After the Price
is Forgotten."*—E. C. SIMMONS.

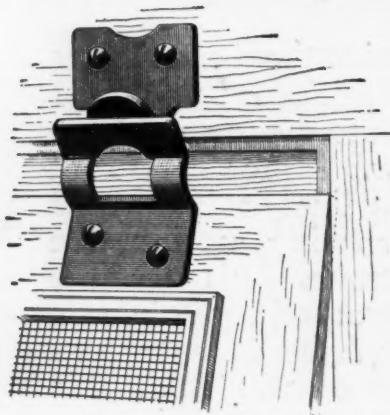
Trademark Registered.

If not at your dealer's, write us.

SIMMONS HARDWARE COMPANY (Inc.)
St. Louis and New York, U. S. A.

WE INITIATE—NEVER IMITATE

Automatic Sash Hangers for Screen and Storm Sash



First Position

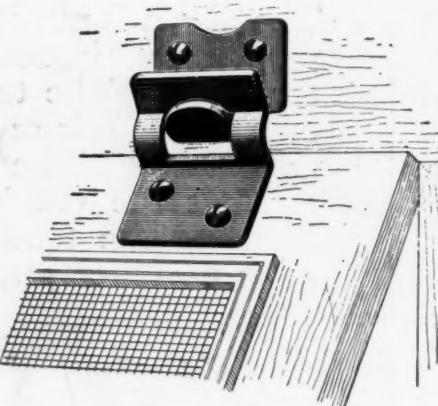
First—The top of screen rests against blind-stop inside of casing, which serves as a guide when sliding hanger up to engage the hook on casing at top. See illustration No. 1.

Second—The bottom of screen or sash is pushed out until the frame on screen or sash slides over hook on casing and LATCHES AUTOMATICALLY. See illustration No. 2.

Third—The Hangers are so constructed that they hold the screen or sash firmly in position and PREVENT RATTLING. See illustration No. 3.

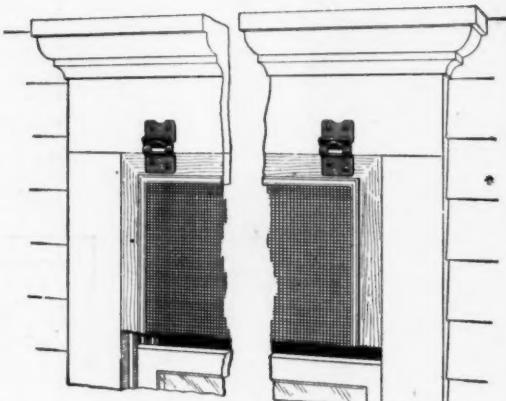
The hangers can be supplied in steel, Japanned or Galvanized, and in solid brass. A sample set of the Japanned hangers will be mailed upon receipt of 15c.

If your dealer cannot supply them, send us his name and we will see that you are supplied.



Second Position

A blind man could hang sash equipped with "National" Automatic Hangers Stand inside the room, push the sash up, and the hangers do the rest. Read the description.



Third Position

National Manufacturing Company, Sterling, Illinois